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THE UNITY OF MEDICINE*

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The unity of human and veterinary medicine is obvious. Human medicine has always recognised the value of the knowledge and study of animal diseases, if only with reference to the adage "try it on the dog," and diseases of animals have bulked large from the time of the earliest studies of infection, such as the work on anthrax by Pasteur, and even earlier, that by Pollender and Davaine (1850). Veterinary medicine has not failed to profit from experience in human medicine, at any rate in the case of many specialities like anæsthesia and knowledge of the central nervous system, which latter has advanced side by side in the two branches of medicine though often initiated by the study of human pathological lesions.

Human and animal pathological work have of necessity always been of mutual value, and sometimes diseases of animals have proved only too readily transferable to man.

The great use of a Section of Comparative Medicine, however, is derived from the meeting together and exchange of ideas and information between practitioners and students of both professions.

The Section of Comparative Medicine appears to me to have peculiar value of its own, not entirely due to its nominal character. Medicine has gained enormously by specialisation, but it is in danger of losing much that it has gained by the same means.

As that specialisation thrives and becomes more recondite, the diffusion of special knowledge tends to be hindered and the work of the specialist becomes further removed from practical ends, since the needs of diseased men or animals are often only known or clearly realised by the more general practitioner. This is not to decry specialism but only to rejoice in every opportunity which encourages the wider and more general recognition and intelligent appreciation of its results.

This Section appears to me to gain not only by the meeting of students of disease of animals and of man, but also by the meeting of practitioners, specialists and pathologists in both groups.

It is a useful exercise sometimes to recall the many points at which the two sides of Comparative Medicine meet and touch and where they have mutually benefited by the contact.

I propose very briefly to mention two aspects of the subject embraced by Comparative Medicine which appear to be of ever growing importance.

(1) The relation of wild animals to disease of man and of the domestic animal, and

(2) The growing knowledge about certain diseases or infections which attack both men and domesticated animals.

(1) Wild animals have for long been known to be the sources of infection in certain special diseases. I need only mention among bacterial diseases, plague and tularæmia, in both of which several species of rodents play a part. Of late years, following the more exact and more extensive investigation of diseases due to the smaller micro-organisms and viruses which for the most part have not been cultivated on artificial media, knowledge has mounted up concerning their transmission from animals to man. The striking work on the transmission to man from birds, of psittacosis, and from blood-sucking bats, of rabies, in addition to the previously recognised reservoirs in wild carnivores, has been carried out in the last year or two, and the knowledge of the acquisition from rodents of Rocky Mountain fever and rat-bite fever is now of long standing. Dyer[1] and his colleagues have recently found that in the Eastern States of America the American dog-tick, *Dermocentor variabilis*, may under natural conditions be infected with the virus of Rocky Mountain fever in addition to the hitherto recognised ticks living on rodents which transmit the disease in the West, and that it can convey the disease to guinea-pigs. Spencer[2] has pointed out that one species of tick, *Dermocentor andersoni*, conveys four infections to man: tularæmia, Rocky Mountain fever, tick paralysis, and Colorado fever; and in each case the source must be a wild animal. Amongst purely animal diseases the reservoirs in wild species of protozoal parasites and pathogenic viruses affecting domestic animals are notorious; more scanty but indubitable evidence is forthcoming of the occurrence of foot-and-mouth disease in wild rats which may, however, have been only recently infected from pigs or cattle. A parallel case is seen in the accumulating facts about reservoirs in wild species of viruses pathogenic for cultivated plants.

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DEPT. OF VET. MEDICINE

I want to dwell a little longer on one example of this category of infections on which entirely new light has recently been thrown which gives hope that the problems of former years will be solved. The dénouement to which I refer concerns typhus fever. This disease has not yet yielded up all its mysteries, especially in regard to its relations with *Bacillus proteus* X 19, but fresh facts have been discovered after much zealous and persistent work extending over many years and a large area of the globe.

As is well known, epidemic typhus was shown by Charles Nicolle to be dependent for its spread on human pediculi, and this has been confirmed by many workers. This discovery fitted in beautifully, or perhaps one should say excellently, in deference to æsthetic prejudices, with what was known of the epidemiology and observed facts about the local spread of the disease and also with the satisfactory results following action taken to get rid of lice, and it corresponded with the usual freedom from typhus experienced in the absence of lice. The problems of typhus epidemiology appeared to be almost completely solved, though a few clinicians and epidemiologists always maintained that typhus occasionally appeared, as it were, *de novo* without its customary accompaniments. There remained, however, two important questions unanswered. Firstly, what is the reservoir of the virus during non-epidemic periods? Is this silent period sufficiently explained by a continuous chain of apparently sporadic cases spread in the same way, but among a population less verminous or less closely herded on account of the weather or season, and partially protected by former outbreaks? Or is there some other undiscovered focus, fomes, or carrier? The other query was suggested by the shrewd observations of clinicians in several different parts of the world, who described sporadic cases of typhus fever among people free or nearly free from lice. Is there, then, another susceptible mammalian host besides man, and perhaps another insect vector?

In pursuit of this problem the late Mr. Bacot and I in 1919 fed bed-bugs on typhus-infected guinea-pigs and then examined their intestines for *Rickettsia prowazeki*, which is found so abundantly in infected lice, but we were unable to demonstrate the infection in these insects. The first result we obtained was the discovery that rickettsia-like forms swarmed in the bugs which had fed in this way. However, we soon found that these forms were present in all bed-bugs from whatever source we obtained them. The bugs, moreover, did not infect guinea-pigs with typhus either by biting or when inoculated in a ground-up emulsion. Critical examination, too, showed us that the "rickettsia" in the bug appeared slightly but distinctly different from *R. prowazeki* in stained preparations. Subsequent work by Bacot, Cowdry and others has shown that somewhat similar rickettsia-like forms are to be found in many insects quite apart from many known infections. At that time the importance of pathogenic rickettsia was not so generally accepted as it is now by students of typhus and similar infections.

The sporadic cases of typhus referred to above are: (1) Those especially described in India in 1921 by Megaw,[3] who considered that the patients had been infected by the bites of ticks; (2) the tropical typhus of Malaya for the knowledge of which we are so largely indebted to Dr. William Fletcher; and (3) the sporadic typhus in the United States, particularly the Eastern and Southern States, which was described by Brill 40 years ago in New York but is now known over much wider areas. In the U.S.A., India, and Malaya the absence of lice has usually been emphasised. The presence of head-lice without body-lice in some cases, however, suggested a possible but not very ready means of transmission. Experimental attempts to transmit typhus by the bites of fleas and bugs had always failed in the past, in the hands of several workers, and this manner of spread appeared to be negatived by the circumstantial evidence of epidemics. Associated with the absence of lice noted in these cases of sporadic typhus has been the isolated occurrence of the cases, usually only one in a household, instead of the wholesale infection of every member of a family, so characteristic of old-fashioned typhus.

The association of rats with sporadic typhus has been observed at Adelaide by F. S. Hone.[4]

The first cases, observed in 1921, were in proximity to large wheat stacks where there were swarms of weevils, and it was suggested that these might in some way convey the infection.

Cherry mentions earlier cases of typhus-like disease in Australia with so-called "mouse sores" also occurring on the patients and others.

F. T. Wheatland[5] in 1926 recorded cases associated with an enormous epidemic of mice; 20,000 mice are said to have been caught on one farm in one night. The human disease was known locally as "mouse fever." Hone later came to regard rats as the important factor originating the human disease. He records cases which he thinks were due to rats in a butcher's shop, and he strongly suspected the agency of rat-fleas or mites. The whole group of typhus-like diseases transmitted by lice, ticks, and mites, is still in rather a tangle in some parts of the world, but the connection is in many cases very close.

Recently remarkable definite additions to knowledge have come from the United States. Some years ago the identity of the virus in the

American sporadic and the European and Mexican epidemic forms of typhus was shown by the demonstration of cross immunity following experimental inoculation, and the two forms are also connected by the occurrence of the Weil-Felix agglutination reaction of *proteus* X 19, in both forms of the disease.

Next the susceptibility to inoculation of tame rats, in addition to guinea-pigs, was demonstrated by Mooser,[6] and the special pathology of the lesion of the scrotum in both animals was described by Mooser and Maxcy. The pathological appearances included the presence of very large numbers of the causal organism, *Rickettsia prowazeki*, such as had previously only been recognised in infected human lice. These micro-organisms were seen inside the cells of the exudate on the surface of the tunica for a few hours at an early stage of the disease. This microscopic appearance proved a valuable evidence of infection with typhus virus in experimental animals, and the rat was found to be in some ways a more valuable animal than the guinea-pig for detecting the presence of virus. The discovery was the more remarkable because earlier attempts to infect rats had led to uncertain results, on account of the slight or absent febrile or other symptoms observed in these animals, and the fact that at that time the characteristic scrotal lesions were not recognised. This shows how careful one should be not to accept negative experimental results as conclusive. The third piece of evidence which has advanced our knowledge of this aspect of typhus infection was the demonstration by Dyer, Rumreich and Badger,[9] that fleas from rats might contain the virus. This was first shown by inoculating a guinea-pig with an emulsion of a number of fleas from wild rats caught in a locality where cases of sporadic typhus had recently occurred. It was then demonstrated by Mooser, Castaneda and Zinsser[10] that some wild rats (*Mus rattus*) in Mexico City were infected with typhus, by inoculating emulsions of their brains into guinea-pigs, and by transmission experiments from infected to healthy rats by means of live rat-fleas, carried out by Dyer, Ceder, Rumreich and Badger[11] in Baltimore (1931).

The existence of a larger field of invertebrate transmitters of typhus has also been mooted by Shelmire and Dove,[12] who found in Texas that picture palaces were infested with a rat mite (*Liponyssus bacoti*), which demonstrated its presence by attacking the audience under the prevailing conditions of darkness which were apparently agreeable to these parasites. The manifestation in most cases was a skin eruption due to the bites, which were also credited with causing an attack of typhus fever in some cases. A coincidence in time and in four distinct places of an unusual number of cases of typhus, varying from 11 to 125 in different places, suggested a connection of this disease with rats through the agency of the rat mites, in this way resembling the " flood fever " of Japan. As far as I know, however, this connection was not completely established in Texas.

I do not wish to enter into the many interesting details and the further theoretical results of these discoveries, and whether they may completely explain the irregular occurrence of sporadic cases and the survival of the virus between epidemics, but the association of typhus and wild rodents may clear up the points which were previously unintelligible, though the importance of rats, ticks and mites had already been suggested by observers in India, Malaya, Australia and the U.S.A. The exact importance of these observations and the effect of the events revealed on the theory of epidemic and endemic disease can hardly yet be estimated but the new factors are of great interest. The question might be asked why if fleas can transmit typhus from rat to rat, and almost certainly from rat to man, do not more extensive epidemics occur when typhus cases and fleas are present, even in the absence of lice, as happens with plague. Perhaps a partial explanation is that typhus does not kill the rats as plague does, and that consequently the infected rat-fleas are not deprived of their natural host and driven to infest man as they are when a fatal epizootic of plague occurs among rats. The infectivity of human fleas has not yet been investigated. For how long and with what regularity rats and fleas are infected is also at present unknown.

There is another class of infectious disease common to man and animals, of growing importance, on which I should like to comment. Among the infections which attack both man and animals, in some the most obvious symptoms are very different according to the kind of mammal attacked. This is the case with those Brucella infections causing contagious abortion of cattle and undulant fever in man.

Besides other means of infection from animals to man and in spite of the apparently rather capricious distribution of the disease in man, direct evidence is accumulating that human infection with *B. abortus* may result from drinking the raw milk of infected cattle, whereas, of course, there is not this risk if the milk is pasteurised. A very interesting account has lately been reported by Hasseltine and Knight[13] of six cases occurring at Pitman, N.Y., in a population of 5,000 to 7,000. All the patients had been in the habit of drinking raw milk from a single dairy which only supplied 17 per cent. of the total milk consumed; the *raw milk* from this dairy constituted only about 11 per cent. of the whole milk used in the town.

Among the cows at the dairy infection with *B. abortus* was prevalent—24 out of 42 cows

gave positive reactions to agglutination tests—and the bacillus was present in the milk of some of the cows.

In streptococcal infections the symptoms and pathological results are necessarily very varied in all animals, on account of different points of entry and parts of the body chiefly affected. Pathogenic streptococci have given a vast amount of technical trouble to the pathologist and bacteriologist and will doubtless give much more in the future. The difficulties involved in distinguishing the different kinds of micro-organisms in this family and in recognising their varied activities have frustrated many workers. Nevertheless, as the result of an enormous amount of labour in the last quarter of a century our knowledge of the group is at last acquiring much greater definition. Many different lines of attack have been taken more or less successfully and each has left landmarks of value for future explorers.

Since Gordon in 1905 and Andrewes and Horder in 1906 exploited the action of streptococci on carbohydrates and other similar culture media for classification, the chief line of advance has shifted to other directions, but the main facts which they laid down still stand as important criteria. Schottmuller in 1903 introduced the very valuable test of lysis of red blood-corpuscles, and the work of Brown in 1919 and of MacCleod and Gordon introduced further refinements.

M. H. Gordon's work on complement-fixation for distinguishing the streptococci of scarlet fever was an early inroad into the territory of serology which has recently yielded many important facts.

Cowan, Eagles, Todd, Lancefield and Griffith have all made valuable observations and advances in this region and have indicated the directions for future work.

The discoveries connected with scarlet fever toxin made by Dochez and Sherman, and the Dicks in 1924 have been the starting point of investigations remarkable for what has already been achieved but still far from finished. They have made it possible to differentiate to some extent between the action of the toxin and the so-called virulence of the bacterial cell.

While much has been going on from the side of human medicine the investigation and differentiation of the streptococci associated with garget or bovine mastitis have also attained a greater degree of definition, though there is still room for difference of opinion on minor points. The researches of Smith, Brown, Orcutt and Jones in America, and Minett and Stableforth[14] in England, taken with the work of Davis and Capp in 1914, and others on the streptococci in milk which cause outbreaks of scarlet fever and tonsillitis, have emphasised and defined the relation of the cow to the human disease.

This is the modern sequence of the pioneer work of Power, of Klein in 1887, Andrewes and Savage, by which a connection between milch cows and scarlet fever in man by way of the milker was established. The earlier investigators were of opinion that the cow was inoculated on the teats with streptococci from an infected milker who was suffering from scarlet fever and that a superficial vesicular lesion resulted from which streptococci escaped into the milk during milking. It was apparently assumed that multiplication of the cocci occurred in the milk. There is no doubt that in some more recent outbreaks the numbers of streptococci of the kind pathogenic for man have been very large in the milk consumed. F. S. Jones has shown, however, that the milk of healthy cows has an inhibitory action on these streptococci which, if added to fresh normal milk, actually decrease very markedly in numbers.

Largely as the result of the work of Smith and Orcutt, and Jones and Little[15] in the United States, it has been shown that very small doses of virulent streptococci similar in kind to those found in acute tonsillitis in man, will produce an acute or subacute mastitis in cows, if instilled into the milk duct or rubbed into scratches in the udder, and that as a result there is an enormous discharge of streptococci with the mammary secretion which may be sufficiently normal-looking to be mixed with other milk for sale. In many of the outbreaks of tonsillitis due to milk, the cows and dairy hands have been examined too late to discover the sequence of events or to incriminate the particular cow or cows. In a recent severe outbreak in Ontario[16] in 1930 which was very thoroughly investigated, the infected milk was traced to one cow with mastitis from which *Streptococcus hæmolyticus* like those from man was excreted in large quantities over a considerable period. Brown, Frost and Shaw in 1926 obtained *Streptococcus hæmolyticus* or *pyogenes*, resembling human strains, from three cows which were in bad condition but were not known to be associated with human tonsillitis.

Such mastitis, it seems hardly possible to doubt, is the cause of outbreaks of scarlet fever or tonsillitis in the human beings who drink the milk without having previously sterilised it.

Careful examination of the streptococcus found in milk responsible for human epidemics has led to the conclusion that the strains from different outbreaks are very similar and are indistinguishable from those causing other disease in man. It is generally recognised now that there is no constant recognisable difference between the human strains, whether they come from cases of scarlet fever, septicæmia, tonsillitis, erysipelas or puerperal fever, except in so far as different serological types are found in each and all of these diseases, and that, as a

rule, strains from scarlet fever are amongst the most highly toxigenic, while those associated with milk infections often form a capsule in cultures.

The streptococci which are responsible for the ordinary bovine mastitis are clearly differentiated from those infective for man by a series of bacteriological tests.

The most recent work on bovine mastitis by Minett and Stableforth[14] and also that on more limited material, by Seelemann and Hadenfeldt[17] (1930) and Hergesell[18] (1931) in Germany have confirmed the work by Davis and other American workers cited above to the effect that a mastitis due to *Streptococcus hæmolyticus* may occur in a cow leading to a very large number of these micro-organisms being excreted in the milk even apart from any known cases of tonsillitis among the milkers. Whether these cases of mastitis are always potential causes of sore throat in man is not known and whether the infection in every such mastitis has been derived from man is also unknown. The occurrence of infectious tonsillitis in man, especially in children and young people, is common enough. As a practitioner of human medicine, one has often come across small outbreaks undoubtedly due to *S. hæmolyticus*. Though these cases are very infectious from man to man, the source of the first case in a section of the community is often not obvious. If such sore throats can be set up by milk from a severe or a mild infection of the udder in cattle the wide dissemination of material for human infection is readily understood. The frequency of such mastitis is not known, but it is certainly higher than was supposed till recently.

An outbreak of septic tonsillitis may be very serious as in some British and American epidemics, and may cause many deaths from septicæmia, peritonitis, nephritis, etc. Quite apart from such very virulent outbreaks, streptococcal tonsillitis is recognised as commonly responsible for very serious complications such as otitis media. Recent work has also shown how close a connection there is between this form of sore throat and acute rheumatism. As Kingston Fowler[19] pointed out in 1880 attacks of acute rheumatism are commonly preceded by an acute febrile sore throat with a more or less definite time interval. This has recently been confirmed and amplified by the admirable work of Schlesinger,[20] Coburn,[21] Sheldon,[22] Collis,[23] and Glover and Griffith.[24] Indeed, it is the opinion of some of these and other observers that an infection with *S. hæmolyticus* is a necessary event in the causation of a relapse of rheumatic fever and its accompanying heart affections.

All epidemics due to streptococcal infections from milk do not present exactly the same symptoms, and in some instances scarlet fever is associated with more arthritis than in other outbreaks. Bacteriologically the strains of streptococcus also vary in details.

Streptococcal sore throat is regarded by some recent investigators as an important source of infection in yet another human disease, puerperal fever. It is thought that droplet infection from the mouth of a carrier of *S. hæmolyticus* or a sufferer from tonsillitis among the attendants on a lying-in woman may produce puerperal infection, and certainly sore throats with *Streptococcus hæmolyticus* occur sometimes among fellow patients, doctors and nurses in the surroundings of cases of puerperal fever. Several recent reports on puerperal fever support this view (*e.g.*, Kinloch, Smith and Stephen[25]).

I do not wish to exaggerate the importance of the particular kind of bovine mastitis which I have been discussing, but I do want to emphasise the great importance of acute tonsillitis in man and to suggest that it is introduced into human beings by milk oftener than has been supposed in the past.

I must apologise for a somewhat disjointed discourse, but the subjects to which I have alluded seem to me to be among the topics of recent and growing interest which serve to emphasise the essential unity of medicine.

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TYPES OF TUBERCLE BACILLI IN SWINE TUBERCULOSIS*

R. L. Cornell and A. Stanley Griffith.

Introduction

This investigation of swine tuberculosis was undertaken to determine the incidence of the different types of tubercle bacilli in a series of pigs found to be tuberculous at the Central Markets, Smithfield, London. The main purpose of the enquiry was to ascertain what proportion of pigs with tuberculous lesions apparently confined to the glands of the head were infected with avian tubercle bacilli. The suggestion of utilising material from the Central Markets was made by Lieut.-Colonel T. Dunlop Young, O.B.E., M.R.C.V.S., to whom we desire to express our thanks for his cordial co-operation and for sending us the specimens.

Carcasses of pigs are sent to Smithfield from all parts of England and Wales, and are there carefully examined for evidence of tuberculous infection. This examination reveals from day to day a varying but always high proportion of carcasses affected with tuberculosis, which in most instances appears to be localised in the glands of the head and neck. In the course of the routine inspections Colonel Young (1926)† observed wide variation in the macroscopic appearances of the lesions in the glands, and in consequence of this observation he on several occasions made enquiries of the owners of tuberculous pigs about the feeding of the animals. He elicited the information that many of the affected pigs had never been fed on cows' milk or even grazed in contact with cows. Colonel Young thought it probable that in such instances tuberculous fowls which had lived in close association with the pigs were the source of the infection. It is well known that pigs in this country may become infected with avian tubercle bacilli. This was shown conclusively by F. and A. S. Griffith (1911),‡ and by A. Eastwood and F. Griffith (1914).§ The latter authors found avian bacilli in no fewer than 27 out of 73 cases in which the tuberculosis was apparently localised in the glands of the alimentary tract.

During the period from January 25th, 1927, to February 18th, 1927, we received submaxillary glands from 103 pigs. The specimens were taken on the days of collection in consecutive series from heads sent into the detention room. Although in each case no lesions were found in any other part of the carcass, it cannot be inferred that the disease in every instance was strictly localised, since the viscera were not available for examination.

Method of Investigation.

Owing to a shortage of guinea-pigs we had to rely in the majority of instances upon direct cultivation for obtaining cultures of the tubercle bacilli. The method of procedure was as follows: The surface of the gland was cauterised and a small piece of tuberculous tissue was removed with sterile instruments through the centre of the seared area. This material was ground up in a test tube and made into an emulsion with a few drops of salt solution. A part of the emulsion was treated with potassium hydrate (2·5 per cent. in the mixture) and used to sow egg and glycerine egg tubes, while the remainder in some instances was inoculated subcutaneously into a guinea-pig. A portion of gland from each pig examined was kept in reserve in cold storage for inoculation into a guinea-pig in the event of the direct cultures failing. The cultures obtained were subcultured two or three times on egg or serum, and then tested on glycerine egg and glycerinated potato. If the cultures exhibited on these media the characters of the bovine type of organism, their virulence was not tested on rabbits. If, on the other hand, the cultures differed from bovine bacilli in cultural characters, their specific pathogenicity was ascertained.

Results of the Investigation.

Direct cultures were made from the tuberculous submaxillary glands of 103 pigs. In eight cases the cultures remained sterile, and the reserved material which had been kept several weeks in cold storage did not produce tuberculosis in the guinea-pig. Cultures of tubercle bacilli were obtained from 95 cases—in 93 directly from the original material and in two instances through the guinea-pig.

Cultural Characters.

From their characters on egg, glycerine egg and glycerinated potato, the cultures could be

* This paper was published in *The Journal of Comparative Pathology and Therapeutics* (1930), 43, 1, 56-62, and is here reproduced from the First Report (1929-30) of the Director, Institute of Animal Pathology, University of Cambridge, pp. 70-76.

† Annual Report, Public Health Department, Corporation of London.

‡ Royal Commission on Tuberculosis, Final Report, Appendix, vol. iii, p. 145.

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placed in one or other of three groups. Of the 95 strains, 63 were dysgonic and identical in characters with tubercle bacilli of bovine bacilli origin; 31 exhibited the characteristic moist, slimy growths of the typical avian tubercle bacillus; the remaining one produced the luxuriant dry coherent growths of the eugonic human type of tubercle bacillus.

Pathogenicity.

(*a*) *Dysgonic Strains.*—Twenty-six of the 63 viruses which yielded dysgonic strains were tested on the guinea-pig by the inoculation in 24 instances of original material, and in two instances of cultures; they proved highly virulent for this species.

Four dysgonic strains, which in early subcultures had produced moist though thin layers on egg (and later proved to be typically bovine), were tested by intramuscular inoculation on birds—three strains on three fowls, and two strains, one of which had also been inoculated into a fowl, on two pigeons. The birds remained well, and when killed four to six months after inoculation showed small necrotic local lesions only. Cultures were sown in some instances, and bovine bacilli were recovered from the local lesions, but not from the liver or spleen.

(*b*) *Strains with Avian Characters.*—The 31 viruses yielding bacilli of avian type were tested either on the fowl, the pigeon or the guinea-pig alone, or on two of these species of animals. The following table gives the number of viruses tested on one and on two species:—

Species.	Number of viruses tested.
Fowl alone	7
Pigeon alone	1
Guinea-pig alone	7
Fowl and pigeon	4
Fowl and guinea-pig	8
Pigeon and guinea-pig	4
	31

Fowls

Cultures of 19 strains were tested on the fowl, one by intravenous inoculation into two fowls and 18 by intramuscular inoculation, each into a single fowl. The two fowls inoculated intravenously, with doses of 0·1 and 0·1 mg., died in 95 and 171 days respectively of general tuberculosis, the livers and spleens being closely beset with caseating tubercles. The duration of life of these fowls was longer than is usual after intravenous inoculation of 0·1 and 0·01 mg. of virulent avian tubercle bacilli. Of the 18 fowls inoculated intramuscularly with doses of 10·0 mg., 14 died in from 23 to 85 days, and one was killed 134 days after inoculation; all showed general tuberculosis, the livers and spleens containing numerous caseating tubercles, rich in tubercle bacilli. The remaining three fowls tested with different viruses, when examined *post-mortem* 87, 111, and 161 days respectively after inoculation, showed local necrotic lesions only.

Further experiments were performed with the three latter viruses. Two strains were inoculated intramuscularly, each into a second fowl, and produced general tuberculosis with numerous bacilli in the lesions. We conclude, therefore, that these strains were fully virulent, and that the slight results in the first experiments were due to low vitality of the cultures used.

The third strain was retested by intravenous inoculation of two fowls, with doses of 0·1 and 0·01 mg. These fowls remained well and were killed 167 and 171 days later respectively. No tuberculous lesions were found in the first fowl, and only a few scattered caseating nodules in the lungs of the second. A culture of avian type was obtained from a lung nodule, and this produced acute tuberculosis in a fowl inoculated intramuscularly. The original culture was tested again on two fowls intravenously, with doses of 1·0 and 0·1 mg. One fowl was killed 102 days, and the other died 101 days after inoculation. There was no macroscopical evidence of tuberculosis in either fowl, and tubercle bacilli in small number were found microscopically in the bone marrow of one only. Cultures from the spleen of one of the fowls yielded two colonies of tubercle bacilli, while tubes sown with marrow from the other remained sterile. The original culture of this virus did not produce tuberculosis in a guinea-pig.

Pigeons

Nine avian viruses were tested each on one pigeon by intramuscular inoculation of culture. One of the pigeons died in 92 days, while the rest were killed in from 130 to 177 days. In all the pigeons the lesions visible to the naked eye were confined to the seat of inoculation in the pectoral muscles, which showed extensive caseo-necrosis and yielded luxuriant cultures. Evidence, however, of dissemination and of multiplication of bacilli in the organs was obtained by cultivation experiments; in all but one instance, *i.e.*, the pigeon that died (cultures from which became contaminated), avian bacilli were obtained in culture from the liver or the spleen or both organs (cf. results with bovine strains).

Four of the above nine strains were tested on the fowl as well as on the pigeon with equivalent doses. The fowls all developed general progressive tuberculosis, while, as already mentioned, in the pigeons only local effects were produced.

These comparative experiments show that the pigeon is less susceptible than the fowl to experimental infection with avian bacilli.

Guinea-pigs

Nineteen of the viruses which yielded cultures of avian types were tested on the guinea-pig. The tests were made with the original tuberculous material in eleven instances and with cultures in eight instances. Except in two cases the original material and the cultures produced the limited local effects which are characteristic of infections with avian tubercle bacilli.

In the two exceptional cases the original material caused the severe caseo-necrotic general tuberculosis characteristic in the guinea-pig of infection with bovine tubercle bacilli, and from one of the guinea-pigs bovine bacilli were obtained in pure culture. On the other hand, the cultures in these two cases obtained on glycerine egg directly from the original pig glands were pure cultures of avian bacilli, not virulent for the guinea-pig and virulent for the fowl. From these results we conclude that the submaxillary glands of the two pigs contained bovine as well as avian bacilli.

The results of the experiments on animals with the avian viruses may be summed up as follows:—

Except with three viruses, the results of the experiments with original material or culture were in accordance with the avian cultural characteristics of the bacilli isolated.

Two of the exceptional viruses gave results which showed that bovine as well as avian bacilli were present in the submaxillary glands of the pigs.

The remaining exceptional virus yielded pure cultures of avian bacilli which, however, were less virulent for the fowl than standard avian viruses. The culture apparently acquired full virulence after a single residence in the body of a fowl.

(*c*) *Eugonic Strain.*—The submaxillary gland of one pig yielded a culture which was identical in cultural characters with the eugonic human type of bacillus. The culture was tested subcutaneously on a rabbit in a dose of 20·0 mg. and produced a local abscess only.

THE MACROSCOPIC CHARACTERS OF THE PRIMARY GLANDULAR LESIONS CAUSED BY THE DIFFERENT TYPES OF TUBERCLE BACILLI

The great majority of the submaxillary glands of the pigs which were infected with bovine tubercle bacilli were conspicuously enlarged and composed wholly or in part of firm caseating or caseo-calcareous substance surrounded by fibrous tissue. On the other hand, in some 14 instances of bovine infection the glands were little if at all enlarged and contained discrete caseous gritty tubercles aggregated here and there into small masses; these foci readily shelled out from thin fibrous capsules.

The glands from which avian tubercle bacilli were obtained in pure culture were, with one exception, not appreciably enlarged, and showed discrete, sometimes aggregated, caseo-calcareous tubercles similar to those occasionally produced by bovine tubercle bacilli. The exceptional gland was definitely enlarged and beset with caseo-calcareous tubercles, ranging in size up to that of a barley grain.

The gland infected with human tubercle bacilli was not enlarged and contained scattered caseo-calcareous tubercles.

This comparison of the tuberculous lesions produced by the different types of tubercle bacilli indicates that when the submaxillary glands of a pig are much enlarged and extensively tuberculous the infection was probably caused by bovine tubercle bacilli.

When, on the other hand, the glands are little if at all enlarged and contain discrete lesions, one cannot decide from macroscopic appearances alone whether the infection was due to bovine, human or avian tubercle bacilli.

Microscopical Examination of Smear Preparations.

Eastwood and F. Griffith (1914) observed that " the number of bacilli found in smear preparations from the affected glands was often an important indication of the nature of the bacillus. In a gland which, macroscopically, suggested avian infection, the presence of numerous bacilli gave support to this suspicion, which was confirmed generally, though not invariably, by subsequent investigation; but scarcity of bacilli, though usually associated with mammalian cases, was found to be inconclusive, as this condition also occurred in some of the avian infections." We examined smear preparations from all our cases, and our results agree with those of Eastwood and F. Griffith.

The Frequency of Avian Infections in Swine.

It will be seen from the table that in three series of tuberculous pigs avian tubercle bacilli alone were responsible for the lesions in from 30 to 38 per cent. of the cases. In two of these series the material investigated was, with six exceptions, taken from pigs in which the disease appeared at the slaughterhouse to be confined to the lymphatic glands of the alimentary tract. In the third series there was no selection of cases, but the pigs had passed a previous inspection in the country; it is therefore probable that in the majority of these cases the tuberculosis was limited to the glands of the alimentary tract.

The results show that in approximately one-third of the cases of apparently localised tuberculosis in swine the disease was caused by avian tubercle bacilli.

Total Number of Cases of Natural Tuberculosis in Swine in which the Type of Tubercle Bacillus has been Determined.

English Statistics.

Authors.	No. of cases.	Types of tubercle bacilli found. Bovine.	Human.	Avian.	Two types.*
A. S. and F. Griffith	59	50	3	5	1 (bov. and av.)
A. Eastwood and F. Griffith	78	49†	1	26†	2 (1 bov. and av.) (1 bov. and hum.)
A. S. Griffith	26	16	—	10	——
R. L. Cornell and A. S. Griffith	95	63	1	29	2 (bov. and av.)
	258	178	5	70	5 (4 bov. and av.) (1 bov. and hum.)

* In the two cases in Eastwood and Griffith's series the bovine strains were obtained from submaxillary glands, the avian from mesenteric glands, and the human from liver. In the other three cases bovine and avian bacilli were associated together in the submaxillary glands.

† The virulence of two of the bovine and two of the avian strains was relatively low; one avian strain was atypical also in cultural characters.

The following figures, quoted from Eastwood and F. Griffith's report on localised tuberculosis in swine, give some information as to the frequency of avian tuberculosis in pigs. During the period between January 25th, 1911, and January 16th, 1913, 24,144 pigs were slaughtered at the Brighton Borough Abattoir, and were specially examined by Mr. Cuckney, the Superintendent of the Abattoir. Of this number 209 were found to be affected with generalised tuberculosis, 393 with slightly disseminated tuberculosis, and 59 with localised tuberculosis. The 59 cases of localised tuberculosis and seven of the cases of slight dissemination were investigated bacteriologically. Of the 59 localised cases eight proved not to be tuberculous, seven though anatomically typical of tuberculosis did not yield cultures, 17 yielded avian bacilli, while from the remainder, as well as from the seven cases of slight dissemination, bovine tubercle bacilli were obtained.

Excluding the non-tuberculous cases and assuming that none of the cases of generalised tuberculosis was due to avian bacilli, the proportion of avian infections was 2·6 per cent. of the tuberculous cases (that is, 17 out of 646).

Conclusions

1.—Natural tuberculosis in swine may be the result of infection with bovine, avian or human tubercle bacilli.

2.—The chief cause of swine tuberculosis is the bovine tubercle bacillus.

3.—The avian tubercle bacillus is responsible for a considerable proportion of the cases in which the tuberculosis is apparently confined to the lymphatic glands of the alimentary tract.

4.—These findings corroborate those of other workers in America and on the Continent of Europe, and support their recommendation that pigs and poultry should not be allowed to run together over the same ground.

THE VETERINARY PROFESSION IN SOUTH AFRICA

(3) PROFESSIONAL VETERINARY MEDICAL SOCIETIES

(b) Cape of Good Hope Veterinary Medical Society[1]

(Inaugural Meeting, November 1st, 1905.)

Dr. H. H. Curson,

Pretoria, South Africa

Introduction

Thanks not only to records of several annual general meetings preserved in the pages of the *Veterinary Record*, but also to the courtesy of the honorary secretary-treasurers of the defunct association (Messrs. J. W. Crowhurst and R. Paine), it has been possible to write a short account of the Cape Veterinary Medical Society. Among the chief of its objects was to have introduced "before Parliament a Bill with a view to protecting the general public against" unqualified practitioners. As this effort has been described (see *Jl. S.A.V.M.A.*, October, 1930, for paper: "The Struggle for Legal Recognition"), no reference to the bill will be made here.

[1]The annual subscription, including entrance fee, was £5 5s., the latter being £3 3s. In 1909 officers of A.V.D. were entitled to election without payment of the entrance fee.

On September 14th, 1905, several veterinary surgeons in Capetown, Messrs. Crowhurst, Forrest, Paine and Robertson, called on the Chief Veterinary Surgeon, Mr. D. Hutcheon, and suggested the formation of a veterinary association. As a result, a circular letter was addressed to all members of the Royal College of Veterinary Surgeons in the Colony seeking their co-operation. Of the members so approached, 23 replied in the affirmative.

Meetings

A meeting, the first, was then arranged for November 1st, 1905, when office-bearers were appointed, rules drafted and steps taken regarding a veterinary bill. Later, general and council meetings were held at irregular intervals, and particulars concerning certain general meetings, referred to as *annual*, were on four occasions sent to the *Veterinary Record*.

Details regarding these *annual* gatherings are tabulated hereunder:—

Date.	Where held.	Reference.
21/3/07	Office C.V.S., Capetown.	*Vet. Rec.* 20/4/07, p. 684.
27/2/08	Central Hotel, „	*Vet. Rec.* 2/5/08, p. 779.
28/4/09	„ „ „	*Vet. Rec.* 2/10/09, p. 217.
13/5/10	„ „ „	*Vet. Rec.* 2/7/10, p. 8.
18/5/11	Capetown.	Notes, R. Paine, 10/3/30.
25/4/12	„	ditto.
5/5/13	„	ditto.

A report of council was generally presented at these meetings, and particulars regarding 1906, 1907 and 1908 are to be seen in the *Veterinary Record*. In addition, the usual subjects of veterinary interest were discussed, namely, meat and dairy inspection,[2] private practice by members of the A.V.D., Civil Veterinary Division and by unqualified persons, registration of farriers, government facilities for annual meetings and reading of scientific papers.

With regard to government veterinarians performing duties which belonged to private practitioners, it is significant that from January 1st, 1907, the following regulations[3] were enforced:

"(1) Within the Municipal Areas of Capetown and suburbs, Port Elizabeth and Kimberley (where private veterinary surgeons are in practice) government veterinary surgeons will attend only to animals suffering or suspected to be suffering from the following contagious and infectious diseases, proclaimed under Section 8, Part II of Act 27 of 1893: anthrax, African Coast fever, epizootic lymphangitis, foot-and-mouth disease, farcy, glanders, lung sickness, rabies, redwater, rinderpest, scabies (in equines), sponsziekte (quarter evil), swine fever and tuberculosis.

"(2) Within the Municipal Areas of East London, Grahamstown, Kingwilliamstown and Uitenhage (where no private veterinary surgeons are in practice) the following uniform tariff of charges for the services of Government veterinary surgeons will be levied, except in the case of animals suffering or suspected to be suffering from any of the contagious and infectious diseases mentioned in Clause (1):—

"For advice given at Veterinary Surgeons' Office, 2s. 6d. per animal per visit. For operation and casting 7s. 6d. per animal per visit. For visit to animal in its own quarters, 5s. per animal per visit."

Referring in an editorial to an account of the first annual general meeting of the Cape V.M.S. the *Veterinary Record* (April 20th, 1907, p. 677) adds significantly, "when a colonial or foreign graduate possesses a diploma of sufficient value, he is legally entitled, upon payment of a registration fee, but *without* examination, to be registered by the R.C.V.S. and become 'to all intents' one of its members. The value of his diploma and the status of the school at which it was obtained are points which may be settled, if need be, by an appeal to the Privy Council." This provision was made in the British Veterinary Surgeons Act of 1881.[4]

Since 19 veterinary surgeons had joined the Society by the end of 1906 and all had paid their dues, there was a credit balance of over £80 at the end of the first financial year, a praiseworthy start of a membership scattered throughout the Cape Colony. Only four annual subscriptions were collected in all, and notwithstanding this concession to members, it was decided at a meeting on January 9th, 1918, that a sum of £150 be handed to the Transvaal Veterinary Medical Association "for the purpose of promoting a veterinary surgeons' bill (South Africa)."[5] The small balance remain-

[2]See Public Health Amendment Act No. 23 of 1897. Under Section 9 regulations were published in the *Cape Government Gazette* of 6/2/06 referring to dairy and meat inspection.

[3]*Vet. Rec.*, 23/2/07, p. 546.

[4]Mr. J. D. W. A. Coles, B.V.Sc., University of South Africa, upon making application for registration was informed by the Secretary, R.C.V.S. (letter 13/1/30), "that the application cannot be granted on the ground that the Diploma held by the applicant is not a veterinary diploma recognised for the time being by the Council, under the provisions of Section 13 (3) of the Veterinary Surgeons Act, 1881."

[5]Letter dated 9/8/18 from the Hon. Sec.-Treasurer Cape V.M.S. (J. W. Crowhurst) to the Hon. Secretary T.V.M.A. (D. Kehoe).

ing was divided in 1921 on a pro rata share among those members who had paid up to the last subscription called for, namely, 1910. It was at this meeting that the affairs of the Society were finally concluded, the South African Veterinary Association having been launched the previous year.

Office-bearers

	1/1/05.	21/3/07.	27/2/08.	28/4/09.
President	D. Hutcheon	D. Hutcheon[7] ...	J. D. Borthwick ...	J. D. Borthwick
Vice-President ...	J. W. Crowhurst ...	J. D. Borthwick ...	W. Robertson ...	R. W. Dixon
Hon. Sec.-Treasurer	W. Robertson[6] ...	J. W. Crowhurst ...	J. W. Crowhurst ...	J. W. Crowhurst
Committee	J. Forrest	J. Forrest	J. Forrest	J. Forrest
	R. Paine	R. Paine	R. Paine	R. Paiñe
	E. J. Wadley, A.V.D.	E. J. Wadley ...	R. W. Dixon ...	A. Goodall
	G. W. Freer	J. Buck	G. W. Freer	G. W. Freer
	J. Buck	W. Robertson ...	A. Goodall[8]	J. Buck
		R. W. Dixon ...		W. Robertson

	13/5/10.	18/5/11.	25/4/12.	5/5/13.
President	J. D. Borthwick ...	Retiring officers re-elected.	Retiring officers re-elected except that E. Fern replaced W. Robertson.	J. D. Borthwick
Vice-President ...	R. W. Dixon			R. W. Dixon
Hon. Sec.-Treasurer	R. Paine			J. W. Crowhurst
Council	J. Buck			R. Paine
	J. Forrest			E. Fern
	G. W. Freer			J. Buck
	J. W. Crowhurst ...			A. Goodall
	W. Robertson ...			

[6]In July, 1906, William Robertson was transferred to Grahamstown and J. W. Crowhurst took over his duties.

[7]The death of Duncan Hutcheon (1842-1907) was a great loss to the profession, especially at a time when it was proposed to introduce a veterinary bill in the Cape Legislature.

[8]And the A.V.D. officer stationed in the Cape Peninsula if he joins the Society. In 1910 it was Captain Burridge.

Members

Name.	Qualification.	Date of Membership.	Further remarks.
Borthwick, J. D. ...	M.R.C.V.S. (1888) ...	1906	
Buck, J. ...	M.R.C.V.S. (1895) ...	1905	
Crowhurst, J. W. ...	M.R.C.V.S. (1887) F. (1893) ...	1905	
Dixon, R. W. ...	M.R.C.V.S. (1886) ...	1905	
Elley, S. ...	M.R.C.V.S. (1903) ...	1905	
Fern, E. ...	M.R.C.V.S. (1891) ...	1905	
Forrest, J. ...	M.R.C.V.S. (1900) ...	1905	
Freer, G. W. ...	M.R.C.V.S. (1894) ...	1905	
Goodall, A. ...	M.R.C.V.S. (1902) F. (1921) ...	1906 ...	Died Wolmaransstad 6/4/30.
Goundry, C. ...	M.R.C.V.S. (1897) ...	1905 ...	Died Malmesbury 26/8/12.
Hutcheon, D. ...	M.R.C.V.S. (1871) ...	1905 ...	Died Capetown 14/5/07.
Kearney, P. J. X. ...	M.R.C.V.S. (1904) ...	1905	
Lyons, J. H. L. ...	M.R.C.V.S. (1902) ...	1905	
Paine, R.	M.R.C.V.S. (1901) F. (1907) ...	1905	
Pakeman, W. G. ...	M.R.C.V.S. (1892) ...	1905 ...	Died Aliwal North 20/1/16.
Robertson, W. ...	M.R.C.V.S. (1893) ...	1905 ...	Died Grahamstown 22/12/18.
Robinson, J. A. ...	M.R.C.V.S. (1885) ...	1905 ...	Died Grootfontein 3/9/15.
Soga, J. F. ...	M.R.C.V.S. (1886) ...	1905 ...	Died Amalinda 6/12/06.
Spreull, J. ...	M.R.C.V.S. (1895) F. (1908) ...	1907	
Wadley, E. J. ...	M.R.C.V.S. (1901) ...	1905	
Worsley, J. A. ...	M.R.C.V.S. (1887) ...	—— ...	Died Prieska 21/8/14.

Other veterinarians who were in the Cape Colony between November 1st, 1905 (inaugural meeting) and May 31st, 1910 (Union of South African Colonies) *and have since died*, but who were *not* members of the Cape of Good Hope V.M.S. are T. Bowhill, M. A. Hutchence, J. Neil and E. E. Stokes.

(c) Natal Veterinary Medical Association[9]

(*Inaugural Meeting, November 19th, 1909*[10])

Introduction

It is a remarkable fact that in Natal a law for the registration of veterinarians, and thus a protection for the public, was enacted, not as the result of efforts by a professional body, but owing to the representations of the Principal Veterinary Surgeon (H. Watkins-Pitchford) and the good sense of the Natal M.Ps. It was, indeed, chiefly due to the formation of a Natal Veterinary Board in 1899 (but which did not operate until 1902) that it was felt that no special need existed for a Natal V.M.A., although the suggestion was "for some ten years past . . . . a matter of discussion and of postponed intention."[11]

At the end of 1909, however, when amalgamation of the four South African colonies was soon to take place, it was considered advisable to draw "more closely together in order that we may both assist to mould the future destinies of our profession . . . . and also by presenting a united resistance to those influences which threaten to react unfavourably upon our professional status or upon our material welfare."[11] In this way, therefore, the Natal V.M.A. made its belated appearance.

Meetings

According to the *Veterinary Record* of July 2nd, 1910, where an annual gathering of the Cape Veterinary Medical Society is reported, the Natal V.M.A. was formed on November 19th, 1909, after which the proceedings of the inaugural and first meetings (incorporating the rules) were despatched to both the Cape and Transvaal Associations. Only one copy of these documents appears to be in existence,[12] this being in the Library of the S.A.V.M.A.

Altogether six meetings are known to have taken place as indicated below:—

Date.	Where held.	Reference.
19/11/09 (Two)	Room 24, Office of Chief Engineer.	*Vet. Rec.*, 2/7/10, p. 8
5/3/10	Office of P.V.S. Maritzburg.	*Vet. Rec.*, 21/5/10, p. 757
30/6/11	Office of P.V.S. Maritzburg.	*Vet. Rec.*, 2/9/11, p. 153
24/10/13	Office of S.V.O. Maritzburg.	*Vet. Rec.*, 2/5/11, p. 709
13/12/13	———	N. V. Board File, Union Buildings.

At the second, fourth and fifth meetings office-bearers were elected as shown in the subjoined section.

Among the addresses to the Association that of the President on March 5th, 1910, deserves special mention, giving as it does a review of professional activities since he succeeded Mr. Samuel Wiltshire, the first state veterinarian. His demonstrations, too, on the pack saddle and field service chests must have been most interesting. On June 30th, 1911, he exhibited a hæmoglobinometer of his own design and the isometer devised by his brother, Dr. Watkins-Pitchford.

A matter which rightly received the attention of the Association was that of unfair competition by Government veterinary surgeons, and on two occasions at least the notice of the Minister of Agriculture was drawn to it.[13] It was actually in connection with the reply from the Principal Veterinary Officer (Union) regarding this question that there was held the meeting of December 13th, 1913, when also, as a result of Mr. Shilston's resignation as Honorary Secretary-Treasurer, Mr. A. Goulé was elected. The following year saw the outbreak of the Great War, and although subsequently the Natal V.M.A. was represented at the Bloemfontein meeting in December, 1917, by the President (F. J. Carless), it would not appear that meetings, beyond those indicated above, took place.

In 1926, at the September meeting of the S.A.V.M.A., Dr. D. T. Mitchell, who was stationed at Allerton Laboratory, Maritzburg, brought up the question of local branches of the Association. After some discussion it was agreed that such efforts should be encouraged, but, unfortunately, apart from the election of a Secretary for the Natal branch, nothing appears to have been done.

Now again (June, 1931), the Natal veterinarians are manifesting renewed interest in the scheme and it is to be hoped that on this occasion a live body will result.

[9]Not to be confused with the Natal Veterinary Board established under Act 21 of 1899.

[10]*Vet. Rec.*, 2/7/10, p. 8.

[11]*Vet. Rec.*, 21/5/10, p. 757.

[12]Entrance fee was £1 1s. and annual subscription 10s. 6d. Apparently funds were in a most satisfactory state, for at the meeting of 24/10/13 the Natal V.M.A. contributed £10 10s. and £5 5s. to the International Veterinary Congress and Victoria Benevolent Fund respectively. Early in 1924 a contribution, approximately £12, was made to the funds of the S.A.V.M.A. and in 1929 (*Vet. Rec.*, 5/10/29) £17 10s. 4d. was contributed by old members of the Natal V.M.A. to the Royal Veterinary College, London, Building Fund.

[13]Another point brought up at the meeting of 24/10/13 was to approach the P.V.O. in regard to the issue of horse-sickness serum at a reduced rate so that private practitioners could participate in inoculation.

Office-bearers

	19/11/09.	30/6/11.	24/10/13.
President ...	H. Watkins-Pitchford	H. Watkins-Pitchford	F. J. Carless
Vice-President ...		F. J. Carless	
Hon. Sec.-Treas. ...	J. B. Collyer	A. W. Shilston	A. W. Shilston

Members

Name.	Qualification.	Date of Membership.	Further remarks.
Amos, S. T. A. ...	M.R.C.V.S. (1897) F. (1909)	With the exception of Messrs. Barnes and Johnston, who joined in 1914, all seem to have been elected in 1909.	
Barnes, W. G. ...	„ (1888)		
Carless, F. J. ...	„ (1890)		
Collyer, J. B. ...	„ (1897)		
Cordy, C. H. ...	„ (1890)		
Goulé, A. ...	„ (1871)	...	... Died at sea 12/9/18.
Harber, A. F. ...	„ (1897)		
Hutchinson, F. ...	„ (1889)		
Johnston, S. I. ...	„ (1895)	... ...	Died Johannesburg 5/8/29.
Power, W. M. ...	„ (1896)		
Sharpe, C. M. ...	„ (1899)		
Shilston, A. W. ...	„ (1908)	... ...	Died India 6/7/19.
Tyler, C. ...	„ (1900)		
Watkins-Pitchford, H. ...	„ (1889) F. (1894)		
Woollatt, S. B. ...	„ (1897) F. (1905)		

It is understood that Messrs. S. H. Ewing, F. M. Hill and J. L. Webb were also members, but no details are available.

Conclusion

It is hoped that the history of the professional veterinary societies, especially the Transvaal V.M.A., will be an inspiration to veterinarians of the future, the lessons to be learned being too obvious to stress. If only the dangers of apathy (our ever-present foe) have been indicated, then the time spent on this compilation has been worth while. Of less importance is the fact that certain names have been preserved from oblivion.

(*To be concluded*)

IMPORTATION OF ANIMALS

During November legal proceedings were instituted in two cases against offenders for contraventions of the Animals (Importation) Order of 1930. This Order, which was made by the Minister of Agriculture and Fisheries under the powers conferred on him by the Diseases of Animals Acts, prohibits the bringing of ruminating animals and swine from certain countries, including all countries on the Continent of Europe, into any port in Great Britain, and also makes it an offence to land such animals in this country.

In view of the serious risk of introducing contagious diseases of animals into this country from abroad, any illegal importation of an animal is regarded by all bodies concerned with the administration of the Diseases of Animals Acts as a most serious matter. In one case a fine of £10 and one guinea costs was imposed for the landing of three pigs from a vessel which was anchored off the mouth of the river Tyne, and in the other case the master of a Japanese steamer was fined £10 for unlawfully bringing a live pig into the port of Newcastle.

THE PONY SHOW

The National Pony Society has issued the Schedule of its coming Show of Ponies at the Royal Agricultural Hall, London, on Friday and Saturday, March 4th and 5th, 1932.

The show truly deserves the designation of "National" as the classification embraces a very wide field, and facilities are provided for the exhibition of every type of pony. There is a range of 18 classes for polo breeding and riding ponies, and to meet the requirements of modern polo no height limit is now imposed on the riding classes.

Classes are also provided for all the native breeds, *viz.*, Dales, Dartmoor, Exmoor, Fell, Highland, New Forest, Shetland and Welsh. The show should provide an excellent opportunity of comparing all the various types of ponies bred in this country.

In consequence of the increasing number of children that are taking up riding, the Society is now devoting practically all the afternoon of each day to children's riding and equitation tests, six classes being provided in this section.

* * * * * *

BROOD MARE SCHEME

His Majesty the King has presented his brood mare Dawn, by Jovial, to the Hunters' Improvement and National Light Horse Breeding Society for their brood mare scheme, whereby mares are located with reliable custodians for breeding purposes. The society has now located 198 mares with suitable farmers, and this year 49 foals from 105 mares served in 1930 were produced under the scheme. Mares no longer suitable for hunting, and for which the owners desire to have a good home, should present them to the society, who will see that they are only used for breeding under the personal supervision of district representatives.

Clinical and Case Reports.

RUPTURE OF THE DIAPHRAGM WITH DELAYED SEQUELÆ

Alex. Thomson, m.r.c.v.s., Glasgow.

The following is the history of a spaniel dog which showed interesting findings on *post-mortem*.

On May 1st, 1930, the dog—then a pup six months old—was run over by a motor car. His injuries were apparently slight: apart from the fact that he was lame on the right hip for a day or two he was quite cheerful till May 16th, when he developed distemper. Pharyngitis and catarrh of the eyes were the salient symptoms, there were no other complications and by June 10th he was convalescent.

Nothing more was heard of him till July 1st, 1931, when he was brought in to have a cankered ear dressed.

On October 13th, 1931, an urgent message was received that the animal was in a fit: death took place very shortly afterwards. On arrival (just after he had died) the information was given that the owner thought he required a dose of worm medicine and had given him a proprietary worm powder. Vomiting started immediately and the animal was dead in ten minutes. Tentative opinion of cause of death —heart failure.

Post-mortem revealed rupture of the right muscular portion of the diaphragm. The entire liver, small intestine and the pyloric end of the stomach were all in the right side of the thorax.

The right lung was atrophied and one of the lobes was adherent to the liver.

The small bowel and stomach were evidently recently introduced, but the liver must have been there for some considerable time, possibly from the time of the original accident.

On further questioning of the owner, he said that he had always noticed that the dog seemed easily tired and panted after the slightest effort.

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INTUSSUSCEPTION IN DOGS

Hamilton Kirk, m.r.c.v.s.

This serious condition of dogs is probably more frequently overlooked than any other disease, as the symptoms it may produce can be so very varied and indefinite.

I have known instances, in the past, in which I have been actually suspicious of its existence, have been watching for some definite sign of it, and yet have been quite unable to detect it by abdominal palpation or any other method.

The classical symptoms are said to be abdominal pain, vomiting, diarrhœa—often blood stained, and the discovery of an elongated swelling upon examination of the abdomen.

If the last-mentioned point be excluded, these symptoms are common to several abdominal diseases; thus the diagnosis is extremely difficult. Even radiographs will not disclose it, as I have now proved for myself. At the same time I have not as yet applied the diagnostic method of filling the bowels with a barium meal. If this were done, an X-ray photograph should then prove valuable.

I believe that not only are numerous cases of intussusception undiagnosed, but many of these make spontaneous recoveries, in consequence of the sloughing of the telescoped portion. Last year I felt positive that a certain terrier puppy, sick with distemper, was also a subject of invaginated bowel. It showed every indication, including an indefinite swelling, which could be felt through the abdominal wall. I wanted to operate, but the owner said the dog had no value and he would just give it a chance to recover spontaneously. The symptoms continued, with steady decline, for about seven weeks, and then it became obvious that recovery was complete.

Nowadays I am suspicious of intussusception when I am told that a dog occasionally vomits, picks at its food without much relish, and yet at times eats heartily, has intermittent diarrhœa persisting for weeks, the motions one day appearing normal and the dog bright, whilst perhaps the next day there is tenesmus, diarrhœa and depression. The fæces occasionally show a speck of blood, but there are exhibited no particular signs of colic—unless the dulness of the animal is accepted as such a sign. Palpation usually reveals nothing, though there have been notable exceptions.

For 2½ months I have been treating a 14-year-old Chow, showing the above symptoms. His mistress thought the world of this dog, and no matter at what time of the day or night, if the symptoms came on I was called out.

I thought sometimes the trouble was chronic gastritis, at other times chronic enteritis, and latterly colitis. Just before the dog was destroyed he had become very tottery on his legs and wished to do nothing but lie down.

Post-mortem examination revealed a large invagination of the small bowel (ileum), the folds of which were firmly bound by adhesions, and the invaginated portion darkly congested. It appeared to be an old lesion, though I doubt if it could have dated from the onset of the symptoms ten weeks before. In addition, there was an old ulcer in the colon which was no longer active, but in which perforation had, as nearly as possible, been effected.

It has been observed, time after time, that intussusception, combined with prolapse of the rectum or colon, is associated with distemper, although I have personally never yet been able

to give an explanation of this, nor have I heard one advanced by anybody else.

After 20 years of practice I have yet to see my first case of intussusception in the cat. This animal is singularly immune from many of the diseases seen so often among Canidæ.

A condition of chronic inflammation of the small intestine will set up similar symptoms to those arising from intussusception, and my most recent example of this was the case of a spaniel, aged eight years, which for the past 12 months had exhibited marked dulness without any other symptom whatever, except very occasional emesis. This dog was admitted under observation for nine days, during which nothing definite could be elicited and the owner then ordered destruction. Autopsy revealed great hyperplasia of about two inches of small gut, chronic inflammatory patches with thickening almost throughout the small bowel, a mesenteric gland enlarged to the size of a walnut and secondary lesions in the kidneys. A red tabby cat, brought with no other symptom than marked progressive emaciation, proved to be a subject of sarcoma of the small bowel. The emaciation, however, was suggestive of neoplasm, the latter being plainly felt on palpation. All of which evidence must make the clinician's thoughts revert to enteric abnormality of some kind whenever he is confronted with an animal exhibiting little other than persistent depression, capricious appetite and occasional vomiting.

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GRUNTING IN HORSES

A correspondent has asked us to insert the following question on grunting in horses in the hope that readers who may be interested in this subject will send their replies for publication in an early issue of the *Veterinary Record*:—"Is grunting in the horse a disease, a symptom of disease, or a habit or vice?"—[Ed, *Veterinary Record.*]

* * * * *

"Pseudo-hermaphroditism."—Changes in sex, commonly from female to male, or rarely *vice versa.*

Material is urgently required for research work on these cases, either in the form of the actual suprarenal glands in 10 per cent. formalin accompanied by clinical notes of each case, or small animals themselves to be sent for observation. Would members kindly send such material to Dr. Vines, the Pathologist, Charing Cross Hospital, London, W.C.2, or communicate directly with him?

Peter, a retriever belonging to Mr. Norton, of Letheringsett, Norfolk, has been awarded the National Canine Defence League's Medal for saving his master's little daughter from drowning. Peter held the child up by the arm when she fell into a pool in a garden unknown to her parent. It is believed that the dog had been holding the child out of the water for 15 minutes when her plight was discovered.

Reports

INSTITUTE OF ANIMAL PATHOLOGY

University of Cambridge

The first report of the Director is now available, price ten shillings net, and may be obtained from the printers, Messrs. W. Heffer & Sons, Ltd., Cambridge. It is a very complete and comprehensive rendering of the work of the various sections of the Institute, and constitutes a valuable addition to the veterinary literature of research into animal disease. A brief summary is conveniently given at the beginning of the Report, of which the following is a transcript:—

Introduction to the First Report

The Institute was established in 1923, under a scheme initiated by the Development Commissioners, with a view to providing facilities for the investigation of animal diseases with special reference to diseases of economic importance in farm stock.

At first, temporary accommodation was secured in the Medical Schools and at the Field Laboratories of the University. In the summer of 1926 the new buildings at Milton Road, consisting of six laboratories and a limited amount of accommodation for large animals, were ready for occupation, and a year later the Institute took over that part of the Field Laboratories which had been in existence prior to 1923. During the summer of 1928 the new School of Pathology was completed, and that portion of it which was to form the central unit of the Institute of Animal Pathology in the University, and had been provided for in the original capital grant, was occupied. This accommodation consists of research laboratories, central offices, and also the use of the various services, lecture rooms, museum, library, etc., common to both departments.

The laboratories at Milton Road now constitute the Field Station of the Institute.

The nature of the work which the Institute is called upon to undertake makes it inevitable that future development should take place at the Field Station rather than in the centre of the University.

Owing to financial stringency facilities at the Institute in the way of staff, accommodation, and animals, have lagged painfully behind the bare necessities required by the nature and amount of the work which has to be undertaken. Soon after the establishment of the Institute had become known the staff were overwhelmed by requests for assistance from stock owners and veterinarians, and from its inception to the present time the demands made upon the resources of the Institute have been far greater

than it could be reasonably expected to cope with financially. During last year a generous grant by the Empire Marketing Board provided much needed accommodation for the housing of animals used in connection with investigations into the use of B C G vaccine in the protection of calves against tuberculosis. Without this assistance it would not have been possible to proceed with this important line of enquiry in an adequate manner. At a later date a further grant by the Empire Marketing Board and the Development Commission enabled the laboratory accommodation at the Field Station to be doubled, and this, when completed, will just meet the immediate requirements of the Institute in this direction. Meanwhile, inadequateness of accommodation for animals and other necessary buildings seriously handicaps the range of enquiry which can be undertaken.

The work of the Institute consists mainly of investigations into diseases of farm animals. While senior members of the staff have in hand research of a more or less fundamental character which calls for continuous work over long periods, enquiry into diseases causing anxiety to stockowners is frequently necessary. Contact with farmers has been established through veterinary practitioners and agricultural organisers, and the possession of a well-equipped motor laboratory enables urgent problems to be investigated upon premises where disease exists. The external work is to some extent seasonal, lambing time throughout the country being an especially busy period. Work in this connection commences in the south-west of England where lambing is earliest, and proceeds northwards to Northumberland where a field station is maintained for the investigation of sheep diseases. The difficult nature of many of the problems presented for investigation soon made it evident that much research of a fundamental character was urgently necessary. The generally accepted principle that modern problems require for their elucidation the co-ordinated efforts of specialists in several branches of science was recognised, and an endeavour was made to build up within the Institute sub-departments or sections representing as many of the more important subjects as financial resources would permit. This has been accomplished by the appointment of several non-graded workers whose salaries are paid from the maintenance grant.

In general, major investigations are undertaken by several sections, teams of workers being formed from the staffs of those whose special line of work is considered most appropriate.

The routine diagnosis department has proved a most valuable part of the organisation. Pathological material of all kinds is received for diagnosis, and while in the main this is of more or less local interest, it has frequently happened that by this means the Institute has been made aware of the existence of hitherto unsuspected outbreaks of disease or has been advised of a particularly important line of enquiry.

REPORT FOR THE YEAR 1929-30

The past year has seen the completion of the buildings generously provided by the Empire Marketing Board for the accommodation of cattle in connection with B C G vaccine experiments. It will now be possible to continue this work on a more adequate scale, and it is hoped that the information already obtained will be materially augmented in the near future.

Changes in Staff.—During the year the staff has been strengthened by the addition of Messrs. J. A. Nicholson, M.A., M.R.C.V.S., and R. A. Hammond, M.R.C.V.S., and the attachment of Mr. D. W. Menzies, M.R.C.V.S. In the early part of the year Mr. L. Jordan was appointed to the staff of the Hannah Dairy Research Institute, Glasgow, and is assisting in an enquiry into the incidence of tuberculosis in herds in Scotland, with special reference to the hygiene of the milk supply. Mr. Hammond has recently received an appointment under the Colonial Office, and Mr. Menzies as Veterinary Adviser at Bristol.

The general scheme of work detailed in previous reports to the Ministry of Agriculture has been adhered to, but during the year under review a more ambitious programme has been attempted, the development of which must of necessity be determined by the amount of the annual grant.

The policy of creating sub-departments with a view to increasing the facilities for team work has been pursued, and the nuclei of sections for the study of Parasitology and Physiology have been established.

Micro-biology

Filterable Viruses.

Mr. Glover has continued his investigations into the *in vitro* cultivation of the virus of *epithelioma contagiosum* by tissue culture methods, and has adduced definite evidence of the multiplication of the virus in media of the plasma clot type (Carrel method).

In attempting to induce an active immunity by means of artificially cultivated virus it has been found that the material is of a lower antigenic value than that obtained from natural sources. The work is being extended with a view to developing simplification in technique, the ultimate object being to produce much larger quantities of the virus under artificial conditions and to overcome the difficulties met with in connection with its practical application to immunological methods.

Contagious Pustular Dermatitis.

With a view to determining if more than one type of virus exists, material has been obtained from a number of outbreaks of the disease in this and other countries and the viruses have been tested by cross immunity experiments. So far, the results have shown that the several strains conform to a single type.

An examination of material from cases of "orf," a form of necrotic dermatitis of the feet of sheep in the Border Counties, has shown that the virus is sometimes present in these lesions. Since the disease causes appreciable loss in condition in affected sheep it is proposed to test the practicability of preventive vaccination on a large scale along similar lines to those which have proved so successful in the case of pustular dermatitis.

Bacteriology

Mr. Bosworth has continued the enquiry into anærobic infections in animals, in the course of which a comparison has been made of the relative values as immunising agents of formalised vaccine and artificial aggressin. The results show that the superiority of the former, as ordinarily prepared, is due largely to the antigenic properties of the dead organisms present, and that the amount of aggressin contained in such a product is relatively small. In addition, he has investigated several oubreaks of paratyphoid infection in young calves.

Caseous Lymphadenitis.

This investigation, which was originally undertaken with a view to determining the susceptibility of British sheep to infection with the Priesz-Nocard bacillus and the distribution of the lesions resulting from several methods of infection, has been completed.

It would appear that the disease is readily conveyed to British sheep either experimentally or by natural methods, and that in general there is a tendency for the infection to spread.

Mr. N. S. Barron has undertaken the examination of several strains of Priesz-Nocard bacillus, isolated from the glands of sheep affected with caseous lymphadenitis, in respect of their cultural characters, staining reactions, toxigenic properties and pathogenicity in small laboratory animals. With differential media the results have so far been unpromising.

B. welchii.

A comparative study of many strains of organisms of the *B. welchii* group has been undertaken by Mr. A. J. Wilsdon and Mr. J. A. Nicholson. The former has examined a number of strains obtained from different sources, especially in regard to their morphological, cultural and toxigenic characters, while Mr. Nicholson has been engaged more particularly in studying their biological properties.

Staphylococcus Toxin.

Mr. R. A. Hammond has investigated the toxigenic properties of several strains of *staphylococcus aureus* isolated from cases of gangrenous mastitis in ewes, and has conducted an experimental study of immunological methods in this connection.

Immunology

Vaccination of Calves against Tuberculosis with B C G Vaccine.

During the past 12 months the joint investigation carried out on behalf of the Medical Research Council and this Institute by Dr. A. Stanley Griffith and Professor Buxton into the immunising properties of B C G vaccine in young calves has been continued. The selected method of immunising, to which reference has already been made in progress reports to the Ministry of Agriculture, is being pursued on a larger scale, while the method of administering the test dose has been modified so as to resemble more closely a natural infection.

Physiology

Mr. Bellerby has continued his investigation into methods for the preparation and separation of the follicle stimulating and lutealising principles of the anterior lobe of the pituitary.

Further work in connection with the factors involved in the production of pseudo pregnancy in the rat has shown that neither pregnancy nor pseudo pregnancy results from copulation when the uterus is anæsthetised. It has been shown that this is not due to damage of the sperm by the anæsthetic, but to the fact that fertilised ova are not implanted, as a result of the absence of receptive changes in the uterus due to non-formation of functional corporea lutea in the ovaries.

The investigation of sterility in female rats which have been fed on diets rich in cod-liver oil has been completed.

Histology

Hypervitaminosis D.

In collaboration with Dr. L. Harris, of the Dunn Nutrition Institute, Mr. J. R. M. Innes has pursued his investigation into the morbid anatomy of hypervitaminosis D with special reference to (*a*) the importance of the calcium and phosphate balance in the diet and its relation to the severity of the pathological changes induced by massive doses of irradiated ergosterol, (*b*) the effect of excessive doses of irradiated ergosterol on the calcification of bones and teeth in experimental animals, and (*c*) the effect of the balance of calcium and phosphate in the diet on the teeth and bones when given with normal or massive doses of irradiated ergosterol.

Experimental Scurvy.

The pathology of experimental scurvy in the

guinea-pig has been studied with special reference to the changes occurring in the bones and teeth during the latent period of the disease prior to the onset of clinical symptoms.

Comparison was made of the changes observed in bones and teeth of animals on diets partially or completely deficient of vitamin C.

Hæmatology.

Mr. A. C. Fraser has completed his study of the blood of cattle and sheep in health and when suffering from a number of diseases.

Numerical standards were obtained for adult animals and for young animals of various ages from within a few hours of birth to the adult state.

Comparison has been made of these standards and the numerical findings in the several pathological conditions. In addition, the histology of the blood elements in health and in disease has been recorded.

Biochemistry

Investigation into the Effects of Nematode Worms on the Metabolism of Sheep.

The work carried out by Dr. Stewart and Mr. Shearer which was referred to in a previous report to the Ministry of Agriculture has been continued. More recent observations have been made with animals suffering from light infestations, and the results have been in accord with those obtained in connection with heavy infestations, namely, that while digestion and absorption of fat and carbohydrate do not appear to be affected, full use is not made of the protein constituents of the diet. These experiments are being repeated with sheep infested artificially with known species of parasites.

Cellulose Digestion in the Ruminant.

Comparison has been made of the amounts of fibre digested in the ruminant and by the cellulose-splitting organism (referred to in various progress reports to the Ministry of Agriculture) *in vitro*. An attempt is being made to ascertain the significance of the chemical composition of the food and the biochemical action in the rumen in relation to the digestion of cellulose by the organisms.

Eclampsia of Ewes.

A biochemical survey has been made of the blood and urine of normal ewes during pregnancy and parturition. In the early part of the year these investigations were continued in Northumberland, when a comprehensive examination was made of the chemical composition of the blood and urine during normal pregnancy, and in many cases of disease commonly met with in those parts. Several naturally occurring cases of eclampsia have been studied from this point of view. Based upon these observations, attempts have been made to produce the symptoms of eclampsia experimentally by inducing alterations in the mineral balance and by interfering with normal metabolism. So far, it has not been found possible to produce typical clinical symptoms even when the conditions in the blood which are supposed to be associated with or responsible for the symptoms have been reproduced experimentally.

Parasitology

Colonel W. A. Wood has completed the study of several hitherto undescribed nematode worms obtained from the stomach and intestines of kangaroos (*Macropus woodwardi*).

The number of routine examinations of material submitted for diagnosis and of specimens for identification has increased very considerably.

Much useful information has been obtained regarding the value of oil of chenopodium in the treatment of parasitic enteritis of horses, and will be published at an early date.

Routine Diagnosis

The value of the work carried out by this section is evidenced by the number of requests for assistance received from veterinarians and stockowners. Since the inception of the department there has been a steady increase in the specimens submitted for examination, and during the past year 4,518 have been dealt with.

COLONIAL VETERINARY SERVICE REPORT

Northern Rhodesia

[Annual Report of the Department of Animal Health, 1930. Foolscap, 30 pages. Livingstone. Printed by the Government Printer.]

Census.

	Cattle	Sheep and Goats	Pigs	Horses Donkeys	Horses and Mules
European owned	103,201	6,555	3,449	638	88
Native owned ...	362,768	?	?	?	?
	465,969				

Staff.

The Director of Animal Health, Mr. J. Smith, M.R.C.V.S., D.V.H., is assisted by Mr. J. P. A. Morris, M.R.C.V.S., as Deputy Director, Mr. R. A. C. Macdonald, B.SC., M.R.C.V.S., as Veterinary Research Officer, five Veterinary Officers, two Research Assistants, 13 Stock Inspectors and seven Dipping Inspectors.

Disease.

Bovine Contagious Pleuro-pneumonia remains confined to Barotseland.

Tropical Piroplasmosis.—It is noted that East Coast fever has not yet occurred in the Territory. Two cases of tropical piroplasmosis were met with in imported cattle at the Research Station.

Trypanosomiasis.—Although the tsetse fly has retreated from some settlements established in connection with the mining industry, an extension in the Fort Jameson District has caused anxiety.

The use of antimony potassium tartrate, both curatively and prophylactically, has been continued and only in one instance did it appear to fail in its customary efficacy. A possible dual infection of trypanosomes is suspected.

Rabies has occurred over a wider area than formerly.

Tick-borne diseases.—Anaplasmosis, Piroplasmosis and heartwater are prevalent in various parts of the Territory.—Dipping at five-day intervals is encouraged, and there are now 180 dipping tanks.

Anthrax and Blackquarter occur, but the use of vaccine is extending.

Attention is drawn to the value of Inspectors being posted to the Reserves, and to the intimate contact between owner and the Department which arises. In this way confidence is established and much valuable information is obtained.

Research.

Experiments with Streptothricosis have been continued, but both the use of pure cultures and the attempts to infect by means of various species of ticks, which were contaminated by these cultures, have so far proved negative. Dipping will control, but does not prevent, infection. Encouraging results have been obtained by injection with neosalvarsan.

Vegetable Poisoning.—Positive experiments have been conducted with *Senecis latifolicis,* a plant allied to *Morœa stricta, Urginea altissima* and *U. burkei.* A systematic botanical survey has been commenced, and feeding tests were carried out with several other suspected plants.

Pseudo Urticaria of Cattle.—This disease, though often mild, may give rise to secondary complications such as myiasis and purulent dermatitis. The initial lesion can be reproduced by the intradermal injection of formic and acetic acids, and it is considered probable that the sting of an insect may be responsible.

Stock Industry.

It is pointed out that for some time to come the Territory can only supply a portion of the requirements of itself and the adjacent Belgian Congo, and that every animal raised can be absorbed. There is, however, a lack in the marketing organisation which discourages sellers and has caused buyers to look to other sources for their supplies. A scheme has been prepared which will assist both parties, the basis being a guaranteed supply, sellers being assured of a pre-arranged price according to the weight and quality of the cattle.

It is felt that this arrangement will encourage better cattle mastership, and the Government has undertaken to afford loans for many reforms and improvements—in particular, importations of improved stock, fencing, building, dipping and water boring.

Dairying.

The encouragement of this industry continues, and despite one set-back, two creameries are being established. There is considerable demand for fresh milk in the mining areas, and railway facilities permit of pasteurised and sterilised milk being delivered. Butter to the value of £27,000 is still being imported.

The Pig Industry, like that of cattle, lacks adjustment between seller and buyer, and the availability of a larger number is urged.

Nutrition.

Emphasis is laid upon the importance of pasture conservation and improvement, and upon the damage done by grass fires. The introduction of fencing and methodical and careful grazing is urged. Supplementary rations should be available during the dry months, and the feeding of bone meal is recommended.

Genetical.

Various imported breeds have been introduced by settlers and by the Government. Owing to variations in management and of pasture conditions there is still uncertainty as to the type to be aimed for. Comparative studies of the different breeds and crosses are being made at the Veterinary Research Station.

H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

	Price Net.	*Post Free.*
	s. d.	*s. d.*
Agriculture and Fisheries, Ministry of:—		
Bulletins:—		
38. Sex-Linked Method in Poultry Breeding. (24-122-38-0).	0 9	0 10
Command Papers:—		
[3979.] International Convention for limiting the Manufacture and regulating the Distribution of Narcotic Drugs; with Protocol of Signature. Geneva, July 13th, 1931. (Miscellaneous No. 20, 1931)	0 4	0 5

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The Council of Agriculture for England unanimously adopted a resolution proposed by Sir Douglas Newton, M.P., requesting the Government to formulate a comprehensive national policy for the development of the pig industry.

Reviews

[**Diseases of the Small Domestic Animals.** Brumley, O. V., v.s., Dean of the College of Veterinary Medicine, Ohio State University. Second Edition. pp. xxi + 611. Not illustrated. Published by Baillière, Tindall and Cox. Price 25s.]

The work is a text book of the diseases, both medical and surgical, of the dog and to a lesser extent the cat, together with occasional references to the rabbit.

The general scheme is that each part deals with the diseased conditions of the respective systems—the respiratory system, the circulatory system, the alimentary canal, diseases of metabolism, etc., whilst the last part is devoted to infectious diseases.

It is written chiefly from a clinical aspect and in his preface the author mentions that it is intended as a text book both for the student and the busy practitioner.

At the commencement of each part examination of the patient is dealt with, whilst the respective diseased conditions are considered under the headings—etiology, pathology, diagnosis, prognosis and treatment.

The general diseases are dealt with fully and in this respect the book will be found by students a useful adjunct to their study of medicine.

Practitioners, we feel, will wish the author had discussed more freely his own experiences and the conclusions he had formed.

Little or no reference is made to recent work which has been carried out into the etiology and treatment of such conditions as distemper, rachitis, worm infestations. The treatment of distemper by the Laidlaw-Dunkin method only receives two lines, whilst when dealing with rachitis, the author makes no reference to the absence of vitamin D as a causal factor, or to the use of cod-liver oil and ultra-violet radiation in the treatment.

We differ from the author's view that osteomalacia is so rare in the dog that it does not merit attention in a book of this nature.

The work of the publishers conforms to their usual high standard.

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[**Anatomischer Atlas der Extremitätengelenke von Pferd und Hund.** Maximilian Kadletz. Berlin: Urban and Schwarzenberg. 1932. pp. 71. 56 plates. 15 RM.]

In some respects this is an astonishing production. It deals with the bones and joints of the limbs of the horse and dog in much more minute detail than has ever been attempted in any previous work on the anatomy of the domesticated animals. Every groove, excrescence, process and other marking on the surface of the bones is indicated and named. If the feature that is indicated has not been dignified with a name by the less ambitious writers of the current text-books, a name or descriptive phrase is provided in Latin or Latinese. As a consequence, some of the figures are so heavily laden with legend lines as to present a truly hystricoid and somewhat confusing appearance. In justification of this assertion, let it be noted that a rough count of the lines in one of the figures gave over 100. In consonance with the title of the atlas, joints are portrayed with no less detail than are the bones, and the wealth of figures of individual articulations leaves no scope for the exercise of the imagination. The shoulder-joint of the horse, for example, is illustrated in 16 figures (in addition to six figures of the bones entering into the formation of the joint); and the corresponding joint of the dog is allowed a like number. The atlas as a whole contains 285 figures; and one figure in the text—of a pair of forceps! The illustration of forceps is here specifically mentioned since it furnishes the keynote of the whole work. The author has very obviously been actuated—not to say obsessed—by the idea that he must omit nothing. This is apparent in every section of the book. Ligamentous bands of barely secondary importance—such as some of those that enter into the formation of joint-capsules—are figured and named.

Each section of the text is furnished with an extensive bibliography, in which the title of a paper is usually supplemented by an abstract or other indication of the purport of the communication.

The atlas is so notable a monument of industry—not untinged with naivety—that it seems little short of ungracious to say that there may be some doubt whether the author's pains will in every detail be turned to profit by the user of the work. Certainly anyone who can with readiness make profitable use of the author's scheme of the tendons, ligaments and bands of the digit of the horse must have a stronger mental constitution than that possessed by the present reviewer.

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"Live Stock Journal Annual," 1932

Confidence in an improvement in pedigree stock breeding conditions prevails in the reviews of the position in all branches contained in the 1932 edition of the *Live Stock Journal Annual*, published by Vinton & Co., London, at 2s. 6d. net, post free. One writer after another in the *Annual* declares his faith in the future of stock breeding, and urges his readers to take advantage of the present easy-money buying. It is the fact that conditions in the livestock breeding industry are at the moment favourable to an economic improvement. There is a wide variety of articles on topical aspects of stock breeding, and a number of useful reference features.

Abstracts

[**Danger to Animals from Industrial Sources** (Trans-title). Miessner, S. *Deuts. tierärztl. Wschr.* 39. 340-345. *Ex. Vet. Bull.* Vol. 1, No. 3. Oct., 1931.]

The Smoke of Foundries.—Sulphur dioxide and arsenious acid are given off in appreciable quantities from such smoke and are spread over large stretches of land by changing winds. Certain areas in industrial Germany are well known to be dangerous to animals on this account. These two main noxious substances vary in proportion in different metallic ores and with methods of smelting.

Rain causes the deposition of sulphurous acid near the foundry and, under suitable conditions, arsenious acid forms a fine dust ("Flugstaub"). Affected land is markedly acid and plants growing on it, although normal in protein and fats, are deficient in phosphorus, calcium and magnesium.

Animal production is seriously affected under such conditions and, in certain districts, is impossible. Animals do not thrive on such land; they tend to become sterile and, owing to excessive calcium excretion, osteomalacia is common. Miessner considers that the onset of lead poisoning is an overrated sequel to exposure to foundry smoke, that lead is present only in small quantities in the smoke and that, in the form in which it occurs, it is rather insoluble. He discusses the effects of arsenical poisoning.

Hydrofluoric acid is emitted from artificial manure factories. It damages the herbage and affected grass has a yellow and frost-bitten appearance; calcium is withdrawn from the bones of animals existing on such fodder.

The author discusses the fog in the Meuse valley which was related to the industrial fumes and caused asthma, bronchitis, and heart disease [see *Vet. Bulletin* 1, 176]. In Westphalia and elsewhere cases have been reported of severe respiratory disease in cows subjected to thick fog when pastured on aftermath.

Lead Poisoning.—Lead dust was conveyed for many years from mines by open streams rising in the Harz mountains. Water from these streams made the surrounding land very dangerous for animals and lead poisoning was common in cattle; the severe nervous type of illness is known locally as "Jammer-" or "Haukrankheit." Affected horses suffer from respiratory trouble and whistling. If plant food is well washed, the lead is removed. According to Miessner's experience, litharge is more toxic than pure lead, lead sulphide or sulphate. Horses are less susceptible to lead poisoning than cattle. A few cases are quoted.

The Dangers of Tanneries.—Anthrax is not infrequently introduced by dried hides imported into Germany: it was found in 0·28 per cent. of hides taken over a period of six years by a certain tannery. The Ascoli precipitation reaction is used for diagnostic purposes, but it is apparently not absolutely reliable.

Reference is also made to water-borne diseases, including sewage poisoning, and to food poisoning in animals caused by the adulteration of concentrate foodstuffs by castor beans after extraction of the oil. Soya bean poisoning is also referred to.

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[**Studies in Teratology**, Williams, W. L. *Cornell Vet.* 21. 25-56. Ex. *Vet. Bull.* Vol. 1, No. 3, Oct., 1931.]

Records show a preponderance of monsters in cattle, especially in dairy cattle. Out of 17 cases described in detail by the author, 15 were of bovine, one of ovine and one of porcine origin. He ascribes this predominence in the bovine species to the culminative effect of heavy reproductive demand, artificial housing and feeding, the improper rearing of dairy calves and an extra susceptibility to genital disease. Calves are frequently debilitated by disease whilst attaining sexual maturity and are bred from before their reproductive organs can properly respond to the demand made on their strength.

* * * * *

[**A Study of Bovine Coccidiosis**. Wilson, I. D. (*Virginia Sta. Tech. Bul.* 42 (1931). Ex. *Expt. Sta. Rec.* Vol. 65. No. 8, Dec. 1931.]

In the introduction to this account it is pointed out that bovine coccidiosis is nearly universal in its distribution in the United States, and that in parts of Virginia it is so prevalent in young cattle as to be almost a limiting factor in the beef cattle industry, existing as it does on most farms. A review of the literature is presented in connection with a list of 59 titles cited and 56 additional titles to the literature examined. This is followed by a report of the experimental work conducted (pp. 11-24), which includes the description of a new species, *Eimeria cylindrica*, for which the short time required by the oocyst for sporulation is the most outstanding physiologic characteristic. *E. zurnii* is the species most common, although *E. smithi* and *E. cylindrica* are usually present.

"Cross-infection experiments with swine and goats indicate that the species of Eimeria used in this study are highly host specific. The maximum thermal death point of nonsporulated oocysts of *E. zurnii*, *E. smithi*, and *E. cylindrica* is about 55° C. with an exposure of ten minutes. Winter temperatures as encountered in Iowa destroyed both sporulated and nonsporulated oocysts of three species of bovine coccidia. A temperature of —6°, after 35 days' exposure, slightly reduced the number of nonsporulated

oocysts of *E. zurnii* and *E. smithi* that developed at 25°-30°. Such treatment made a much greater difference in the number of *E. cylindrica* oocysts that developed. Centrifuging non-sporulated oocysts at 1,000 r.p.m. for ten minutes did not appear to reduce the number or retard the rate of sporulation of the three species of bovine coccidia that have been studied.

" Nonsporulated bovine coccidial oocysts are readily destroyed by mercuric chloride, phenol, liquor cresolis compound, and formaldehyde, but were not destroyed when incubated in 2 per cent. potassium dichromate or 2 per cent. copper sulphate. Drying in the direct rays of the sun for 24 hours killed Eimeria oocysts of bovine origin. Drying, out of the sun, was less effective. There is indication that putrefaction readily destroys nonsporulated oocysts of bovine origin in a short time.

" Fully sporulated coccidia of bovine origin proved difficult or impossible to digest by ordinary means *in vitro* or with young rats. Young calves fed on powdered skim milk were not immune to bovine coccidia, although they were somewhat resistant, probably because the oocysts did not remain in the body long enough for digestion. When fully sporulated oocysts were given to susceptible young calves, non-sporulated oocysts appeared in the fæces in about seven days. About five days later there was a decline in the number eliminated, which was followed by a secondary rise which reached its peak about 18 days after the original infective dose was given. During the secondary rise, the number eliminated was twice or three times as great as during the primary period.

"An acute attack of bovine coccidiosis may end in the animal becoming a chronic carrier for an indefinite length of time. Possibly resistance or immunity is a greater limiting factor to the disease than the fact that there may be a limited number of asexual generations of the organism. The strict sanitary precautions practised in this study prevented the spread of coccidiosis to susceptible calves."

The cause of 90 per cent. of the diseases of little pigs, according to Hustede, is as follows: 70 per cent. were due to diplo-streptococci, 10 per cent. to paratyphoid, 5 per cent. to *B. coli*, and 5 per cent. to swine plague and cholera. An autogenous herd bacterin was found to be of value in controlling little pig infections. Housing and diet may be important predisposing factors. These findings of Hustede are probably based on the results of investigations in a restricted area or relatively small district. The percentages of different infections may vary somewhat in other districts. The high percentage of prevalence of streptococcic infection reported by Hustede is quite striking and perhaps is worthy of serious consideration. During the last few years pleomorphic streptococci have been found to be associated with disorders in swine in the corn belt of the United States.—(*Bio. Abst.* 7946.)

N.V.M.A. Divisional Report

SCOTTISH METROPOLITAN DIVISION

Meetings at Edinburgh*

A General Meeting of the Division was held in the Royal (Dick) Veterinary College, on Wednesday, November 4th, 1931, at 2.30 p.m.

The President, Professor Mitchell, occupied the chair and the following gentlemen signed the attendance book:—

Members.—Messrs. A. Brownlee, W. S. Gordon, D. R. Wilson, J. Ker, Thomas P. Young, W. Wallace Peggie, C. B. Davidson, John MacFarlane, J. Reid, G. A. Sangster, W. Scott, H. M. Wilson, J. N. Ritchie, A. L. Robertson, A. K. Cameron, Dr. T. W. M. Cameron, Majors J. G. MacGregor, and J. Robertson, Professors J. Russell Greig, G. F. Boddie, R. G. Linton, Messrs. Esmond Brown, J. P. Walker and J. F. Player and the Hon. Secretary, Mr. W. C. Miller.

Visitors.—Messrs. D. Cameron, A. R. Milroy, J. McLeod, K. A. Forker, William Watt, J. N. Parnell, W. G. Robinson, F. A. Gordon, J. S. A. Spreull, R. H. Robertson, F. A. Davidson, Lieut.-Colonel F. C. O'Rorke, Dr. H. Dryerre, Dr. B. P. Wiesner, Dr. Clemenko, Dr. Valdo Klemola, and Miss J. McCullam and several students.

The minutes of the last meeting, pending publication in the *Veterinary Record*, were read in abstract and duly approved.

Apologies for inability to attend were intimated from Mr. John Brown, Mr. E. J. H. Sewell, Dr. O. Charnock Bradley, Mr. W. Nairn, Mr. A. Gofton, Major A. Baird, Major A. Spreull and Professor D. Imrie.

CORRESPONDENCE:

(1) A letter was read from the Secretary of the Royal College of Veterinary Surgeons appealing for financial support for the Sir Frederick Smith Memorial Fund which was being raised to make available to the public the results of Sir Frederick's latter labours.

The President announced that the Council had recommended that a sum of £2 2s. be subscribed by the members. This was carried unanimously. The President further urged upon individual members the desirability of supporting the Scheme by subscription so far as they found possible.

(2) A letter was read from the General Secretary of the National Veterinary Medical Association which had reference to the free treatment of sick animals belonging to the poor. A memorandum was enclosed. The Council had previously considered the matter, and the President briefly explained the position.

*Received for publication December 18th, 1931.

It had been recommended by the Council that a Sub-Committee should be formed to consider the question in detail, and it was announced that arrangements would be made whereby each member of the Division would have opportunity to make himself familiar with the position by means of a copy of the correspondence, etc., which would be circulated to him. It was proposed that an early meeting of the Division should thereafter be called to decide upon further action.

The Council recommended the following gentlemen to constitute the sub-committee:—The President, Professor R. G. Linton, Messrs. J. N. Ritchie, A. K. Cameron and T. P. Young. On the motion of Major MacGregor, seconded by Dr. T. W. M. Cameron these gentlemen were elected, with power to add to their numbers if necessary.

(3) A letter was read from the General Secretary of the N.V.M.A., enclosing copies of an article entitled "The Veterinary Profession and its obligations to the Public," for which publicity in the local press was urged. The Council had decided to take certain steps, and those members who desired copies for their local press were given them at the close of the meeting.

(4) A letter was read from the N.V.M.A., enclosing a resolution from the Midland Counties Division relating to Johne's disease in cattle and asking for the opinion of the Division as to whether, in the members' opinion, this disease should be scheduled. The President intimated that the Council recommended that a small sub-committee should collect the necessary information and report to the next meeting.

The Council had recommended that Major MacGregor and Mr. J. N. Ritchie should constitute the Committee. On the motion of Professor Linton, seconded by Mr. A. L. Robertson, the name of Professor J. Russell Greig was added to this committee. Mr. H. M. Wilson proposed and Mr. H. F. Downie seconded the motion that the sub-committee be thus constituted and that they have powers to add to their numbers if necessary.

Election of Member.—The name of Mr. F. Mayne, Auchterarder, who had been duly nominated for membership at the last meeting, was read and his election was unanimously made.

Nominations.—The following gentlemen were nominated for membership:—Messrs. F. A. Gordon, Blairgowrie; D. Cameron, Ministry of Agriculture and Fisheries, Edinburgh; W. G. Robinson, Royal (Dick) Veterinary College, Edinburgh; R. H. Robertson, Royal (Dick) Veterinary College, Edinburgh; W. Watt, Ministry of Agriculture and Fisheries, Glasgow; K. A. Forker, Ministry of Agriculture and Fisheries, Ayr; J. M. Hillock, Dunbar; J. S. A. Spreull, Royal (Dick) Veterinary College, Edinburgh; and A. Sillars, Falkirk.

Film Demonstrations.

The President then called upon Dr. B. P. Wiesner, of the Institute of Animal Genetics, Edinburgh University, to address the meeting.

Dr. Weisner prefaced his Film Demonstration by a brief review of the state of our knowledge of the interplay of hormones concerned in the process of mammalian reproduction. The subject of his Film Demonstration was maternal behaviour in the rat. It illustrated the low degree of maternal specificity exhibited by the rodentia; and demonstrated that the maternal rat could be induced to accept and attempt to nurse young kittens and rabbits. The influence of the injection of certain hormones on the psychological behaviour of the rat was also shown.

At the end of the Film Display the President called for a hearty vote of thanks to Dr. Wiesner, which was carried with acclamation.

Dr. Wiesner replied that he had been more than usually pleased to have the privilege of showing them the film, because the whole subject of maternal behaviour had received its original and greatest contribution from veterinary surgeons. Much of the present knowledge of the sex cycle in mammals was the result of observations made by practitioners. He wished to thank the Division for having enabled him to show them the film.

Mr. A. Brownlee, of the Animal Diseases Research Association, Moredun, was then introduced by the President. He exhibited two films which illustrated the clinical aspects of louping-ill, scrapie, and grass sickness and gave explanations as the films were running.

Several members took part in a discussion arising from the film demonstration, to which Mr. Brownlee replied.

On the call of the President, Mr. Brownlee was accorded a hearty vote of thanks.

Mr. Brownlee briefly thanked the meeting.

Hon. Secretaryship.—Mr. William C. Miller then intimated his resignation from the Hon. Secretaryship and explained that this had become necessary owing to his lack of time to attend to matters connected with the Division.

The resignation was accepted with regret. Mr. William C. Miller proposed that Mr. J. N. Ritchie be appointed Secretary and Treasurer. This was seconded by Mr. H. M. Wilson and carried.

A demonstration of X-ray apparatus, etc., was given in the Clinical Department by Mr. Grover.

The members then adjourned for tea.

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SPECIAL MEETING.

A special meeting of the Division was held in

the Royal (Dick) Veterinary College, on Wednesday, December 9th, 1931, commencing at 2.30 p.m.

The minutes of the previous meeting were read and approved.

Apologies for inability to attend were intimated from Major A. Baird, Professor J. Russell Greig, Mr. W. C. Miller, Mr. H. M. Wilson, Mr. J. Henderson and Mr. A. K. Cameron.

Obituary.—The President referred to the death of Mr. John Aitken, Dalkeith, who, he said, was one of the original members of the Division who not only had for a long period served on the Council of the Division but had acted as Secretary and Treasurer and as a Vice-President. The President moved that the Secretary be instructed to send a letter to the relatives of Mr. Aitken expressing the sympathy of the members. This was carried in silence.

Elections to Membership.—The names of the following gentlemen who had been proposed for membership at the previous meeting were read:—Messrs. J. S. A. Spreull, W. G. Robinson, and R. H. Robertson, of the Royal (Dick) Veterinary College; Mr. F. A. Gordon, Blairgowrie, Mr. W. Watt, Ministry of Agriculture and Fisheries, Glasgow; Mr. D. Cameron, Ministry of Agriculture and Fisheries, Edinburgh; Mr. K. A. Forker, Ministry of Agriculture and Fisheries, Ayr; Mr. A. Sillars, Falkirk; Mr. J. M. Hillock, Dunbar. On the motion of Mr. A. R. C. Bowie, seconded by Mr. W. Nairn, these gentlemen were unanimously elected.

Treatment of the Sick Animals of Poor Persons.—The meeting then went into committee to discuss the questions arising from the memoranda sent from the N.V.M.A. in connection with the provision of free veterinary treatment for sick animals of the poor. On the resumption of open meeting, Professor R. G. Linton moved that "The Centralised scheme be definitely rejected." This was seconded by Mr. A. R. C. Bowie, and carried unanimously.

Mr. Nairn further moved that "The Division approves of co-operation with Societies for the Prevention of Cruelty to Animals, in Scotland, to endeavour to evolve a scheme for the treatment of sick animals of the poor and resolves to submit this question to the Executive Committee of the Scottish Branch of the N.V.M.A." This was seconded by Mr. A. R. C. Bowie and carried unanimously.

The Secretary was instructed to inform the Council of the N.V.M.A. of the above resolutions.

Johne's Disease.—The Secretary read the resolution of the Midland Counties Division which had been sent from the N.V.M.A. He also reported from the sub-committee which had considered this question, as follows:—"The committee is of opinion that, since any general scheme for the control and eradication of Johne's disease must be dependent upon the early diagnosis of cases, notification is at present impracticable; particularly for the reason that our knowledge of the Johnin Test is very limited, and that Johnin of known potency is difficult to obtain.

"With this in view, the committee fears that the use of Johnin on a large scale at present, might bring a potentially valuable test into permanent disfavour."

Mr. A. Gofton said that, in his opinion, it would be premature at present to make this disease notifiable. He had had a series of bowels from bovines examined and had found that the number of animals affected (and from the bowels of which the organism could be demonstrated) but which showed no clinical signs of the disease, was in excess of the number of clinical cases. If the disease did become notifiable it would only be to provide compensation for animals which were showing definite evidence of the disease and would not be a definite weapon for prevention and control, for no effective means of prevention and control were known. He would rather suggest that it should be pointed out that this was a disease in which further research was urgently required to find a good method of control or of prevention. He moved that the Division should pass a resolution in the terms suggested by the Committee. This was seconded by Mr. J. P. Walker and carried unanimously.

Date of next meeting.—It was agreed that the annual meeting should be held either on February 10th or 17th, 1932, in the Royal (Dick) Veterinary College. The Council had suggested that the subject should be the Double Intradermal Tuberculin Test and that Mr. A. Gofton and Mr. Glover be asked to take part. This was agreed to.

Appointment of Office Bearers.—As the office bearers had not been appointed at the last meeting it became necessary to do so now. Mr. Gofton proposed and Mr. Baillie seconded that the present office bearers be elected to serve until their successors are appointed in accordance with the rules of the Division.

On the call of Mr. A. R. C. Bowie, the President was accorded a hearty vote of thanks for his conduct in the chair.

This concluded the business.

J. N. Ritchie, *Hon. Secretary.*

Colostrum milk may cause digestive disturbances when fed to babies or invalids and therefore milk drawn 15 days before or five days after calving should not be put in the supply intended for human consumption.—*Illinois Health Quarterly.*

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

DIARY OF EVENTS

Jan. 11th.—N.V.M.A. Editorial Committee Meeting at 2, Verulam Buildings, Gray's Inn, W.C.1.

Jan. 12th.—Meeting of the Derbyshire Division, N.V.M.A., at Derby.

Jan. 14th.—Meeting of the Central Division, N.V.M.A., at 10, Red Lion Square, W.C.1.

Jan. 15th.—Annual Meeting of the Mid-West and South Wales Division, N.V.M.A., at Bristol.

Jan. 20th.—Meeting of the Lancashire Division, N.V.M.A., at Manchester.

Aug. 8th-13th.—N.V.M.A. Jubilee Congress at Folkestone.

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PERSONAL

Señor Cesareo Sanz Egaña, whom many of our readers will remember meeting at the International Veterinary Congress, and who is the Director of the Madrid Slaughterhouses, has recently been appointed Professor of Veterinary History at the Madrid Veterinary School. Señor Sanz Egaña has taken a keen interest in the history of the profession, and has written many valuable papers on the subject. He is specially interested in the history of meat and food inspection.

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Appointment.—Major H. H. Brassey-Edwards, M.R.C.V.S., Chief Veterinary Officer, Kenya, has been appointed to the post of Deputy-Director of Agriculture (Animal Industry), Kenya.

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Will.—Hughes, Mr. Thomas David, M.R.C.V.S., of Woodstock, Oxon (net personalty £783), £2,200.

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Marriage.—Canning—Dunlop. At Moat Park Church, Biggar, on December 25th, 1931, by the Rev. C. W. Inglis Wardrop, M.A., David Dunlop Canning, M.R.C.V.S., D.V.S.M., younger son of Mr. and Mrs. A. Canning, 49, Whitehaugh Avenue, Paisley, to Margaret Jane Dunning (Peggy), eldest daughter of Mr. and Mrs. J. Dunlop, Royal Bank House, Biggar.

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R.C.V.S. OBITUARY

Hewitt, Samuel John, Arpley Street, Warrington, Lancs. Graduated May 22nd, 1888. Died December 27th, 1931; aged 73 years.

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In reference to Mr. Hewitt, the *Warrington Guardian* says: "He was a son of the late Samuel Hewitt, veterinary surgeon, of Park Road, Newton-le-Willows. Mr. Hewitt had an extensive practice in Warrington and district, but nine years ago suffered a breakdown in health, which compelled him to relinquish his business interests. Up to the time of his retirement he was a member of the Conservative Club and of the congregation of Holy Trinity Church.

"Mr. Hewitt, who was a widower, leaves one daughter.

"In the early eighties Mr. Hewitt was one of the most prominent athletes in the north of England and competed at all the leading athletic festivals in the north—Widnes, Chester, Huddersfield and Stoke-on-Trent. His principal distance was the half-mile, and among his chief opponents were R. Andrews, of Orford, northern counties half-mile champion; W. G. George, one mile champion of England; and W. Snook, of Shrewsbury."

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ARMY VETERINARY SERVICE

London Gazette—War Office—Regular Army

January 1st.—Major R. T. Smith retires, receiving a gratuity (January 1st).

Major L. Danels to be Brevet Lieutenant-Colonel (January 1st).

Territorial Army

January 1st.—Major J. A. Dixon, T.D., to be Bt. Lieut.-Colonel (January 1st); Major A. F. Castle, F.R.C.V.S., to be Bt. Lieut.-Colonel (January 1st).

Major G. E. Henson, T.D., having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform (January 2nd).

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Errata.—In Mr. J. S. McCann's paper "Observations on the Tuberculosis Order," etc., reproduced in our issue of December 26th, 1931: p. 1289, col. 1, para. 2, line 12 should read: ". . . and the inspector went about his work with a live interest"; col. 2, para. 3, line 19—for "incompleteness" read "incompetence"; p. 1290, col. 1, para. 2, line 12—delete words "chronic waster"; col. 2, para. 4, line 8—for "or" read "after"; p. 1291, col. 2, para. 2, line 3—for "12 years of age" read "12 months old"; p. 1293, line 3, for "bovine" read "swine"; line 9, for "growing" read "discharging."

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CHEMICAL SYNTHESIS OF A VITAMIN

Sound Wave Sterilisation of Milk

"What is claimed to be the first chemical synthesis of a vitamin was described recently to the American Association for the Advancement of Science by Dr. Charles E. Bills and Dr. Francis G. McDonald who synthetically produced vitamin D in laboratories at Evansville, Indiana," says the New York Correspondent of *The Times*. "They obtained the vitamin from ergosterol, but without using light, either in the form of sunshine or of ultra-violet rays. They treated ergosterol with methyl alcohol, ether, and ethyl acetate under low temperature with a rigid exclusion of oxygen. The vitamin thus obtained was not as powerful, they said, as that obtained by the use of sunshine or ultra-violet light, but it offered unusual possibilities.

"Dr. Newton Gaines, of Texas Christian University, described the discovery by himself and Dr. L. A. Chambers that milk could be sterilised by sound waves. Waves like those of a high-pitched musical note directed into the large end of an inverted funnel, through which milk was fed, were found to kill 99 per cent. of the bacteria, although how they did so the experimenters had not yet been able to determine. Dr. Gaines said the "sound steriliser" would sterilise any fluid containing bacteria, and it could be operated continuously. Thus milk might be fed into the steriliser as fast as it came from the dairy, and immediately put into bottles for use."

ALBERT HALL BOXING FOR THE ROYAL VETERINARY COLLEGE

We trust that wide support from members of the profession will be forthcoming for the Racing Lads' Boxing Tournament (Newmarket *versus* The South of England), in aid of the Royal Veterinary College and the Heritage Craft Schools, Chailey, which will be held at the Royal Albert Hall on Tuesday, February 9th, 1932, commencing at 8 p.m.

This Tournament should provide a very merry evening, as all the competing lads are winners of trophies, and rivalry is intense. Classes vary from four stone (paperweights) to eight stone. H.R.H. The Prince of Wales is President of the responsible organisation and the Committee is especially desirous of obtaining universal support, in this, the first year of the Competition. It is hoped that a large number of our readers will take tickets and make the Tournament known to all friends of the Royal Veterinary College, and the Heritage School, Chailey.

The price of tickets ranges from 2s. 6d. to 20s., and seats can be booked upon application to Mr. Jeff Dickson, 8/10, Cecil Court, Charing Cross Road, London, W.C.2, or from the Principal or Secretary of the Royal Veterinary College.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

JOHNE'S DISEASE.

To the Editor of The Veterinary Record.

Sir,—In reply to Colonel Graham Rees-Mogg's letter, advising me to try a particular brand of "Johnin," I have to state that I have, in conjunction with my colleagues tried this brand, and also others, and have never yet obtained a reaction, even in clear clinical cases. I am aware that others state that it is most useful in those cases in the early stages where the clinical symptoms are not definite, but my experience leads me to differ. I quite agree with Colonel Rees-Mogg that an animal may be suffering from Johne's disease for a long time before manifesting any really reliable clinical symptoms.

Some few years ago I approached the local authority urging that the disease should be scheduled, and in reply was informed that the responsible authorities were awaiting the results of experiments at a certain veterinary research institute before considering it. As these experiments have been, more or less, in full blast since as long ago as 1910, if not earlier, and so far as I am aware, nothing of value has been added to our knowledge, if this attitude is persisted in, the disease, which is rapidly on the increase, will never be scheduled. Although the National Farmers' Union is not at the moment in sympathy with the proposal to schedule the disease, there is no doubt that the rank and file of agriculturists, amongst whose stock the disease is rife, are unanimous in its favour. The proper course is to schedule it at once, which can be done by a very small Order, or addition to the existing Tuberculosis Order.

In this country veterinary research into cattle diseases is crippled by the fact that we will persist in locating our colleges in the heart of cities, and at the present moment research work which should be done by veterinary colleges is being carried out by the agricultural colleges. There would be no lack of heavy agricultural and other support if we decided to rebuild our oldest College in rural surroundings. This is 1932, not 1792.

Yours faithfully,
J. F. D. Tutt, M.R.C.V.S.

1, St. Cross Road,
Winchester. *January 2nd*, 1932.

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SWINE PRODUCTION IN THE U.S.A.

To the Editor of The Veterinary Record.

Sir,—In a note on page 1025 of the issue of the *Veterinary Record* for October 3rd, it is stated, or at least implied, that the swine production in the United States totals but 30,000,000 animals a year.

May I refer you to the annual report of the Chief of the Bureau of Animal Industry, U.S. Department of Agriculture for the fiscal year ending June 30th, 1931 (page 40) in which it is stated that 44,047,458 hogs were inspected by the federal meat inspection service during the year.

As the federal meat inspection service is concerned only with animals slaughtered at abattoirs shipping their products interstate or for export, this number by no means includes all of the swine slaughtered in this country yearly.

While exact figures of the slaughter of swine by establishments doing a local or an intrastate business exclusively, and by producers, are not available, it is estimated (unofficially) that the percentage of animals coming under federal inspection does not exceed 60 per cent. of the total number of such animals slaughtered.

In other words, 40 per cent. of the animals slaughtered are destined for use locally or within the state in which the animals were produced, and their inspection is a function of the state and city governments.

On this basis, the production of swine in this country last year exceeded 73,000,000 animals. The number inspected in the preceding year was slightly higher. It has not been materially less for a good many years, so undoubtedly the statement that the annual production of hogs in the United States is 30,000,000 is "way out of line."

Yours very truly,
D. M. Campbell.

Veterinary Medicine,
75, East Wacker Drive, Chicago.
December 21st, 1931.

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TREATMENT OF FOLLICULAR MANGE.

To the Editor of The Veterinary Record.

Sir,—When reading Mr. Henry Gray's interesting and instructive address on "Some Medical and Surgical Conditions in the Dog," I noted that Major Hamilton Kirk said that "Odylen" would effect an apparent cure, lasting three to six months, but there was nearly always a recurrence. I am pleased to say that I have had much happier results. I have been treating follicular mange cases for nearly three years with "Odylen" and have not had a single failure, neither, as far as I can trace, has there been any recurrence. I superintend each treatment, and in which I play an active rôle.

Mr. Bell said that he "would not like a distemper case to come near his place," That seems to me a most difficult thing to avoid.

Faithfully yours,
52A Lansdowne Place, Philip Vincent.
Hove.
January 5th, 1932.